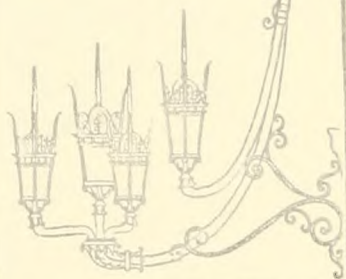


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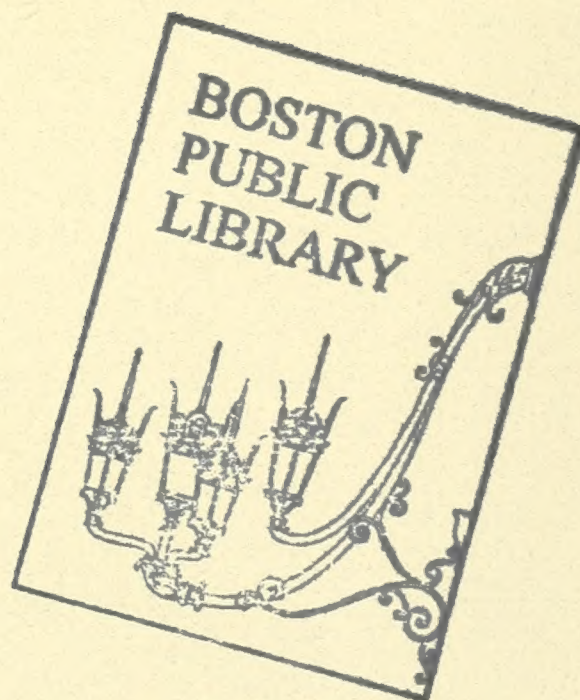
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NINETY TREMONT STREET

TREMONT TEMPLE / 90 TREMONT STREET



MIDTOWN CULTURAL DISTRICT
DRAFT PROJECT IMPACT REPORT

TREMONT TEMPLE/90 TREMONT STREET
76-98 TREMONT STREET
BOSTON, MASSACHUSETTS

Submitted to:
Boston Redevelopment Authority

Submitted by:
St. James Properties, Inc.
On Behalf of
The Evangelical Baptist Benevolent and Missionary Society
Tremont Temple Baptist Church
and
90 Tremont Street Associates, Limited Partnership

December 14, 1989

TREMONT TEMPLE/90 TREMONT STREET
DRAFT PROJECT IMPACT REPORT

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EXECUTIVE SUMMARY

St. James Properties, Inc. on behalf of 90 Tremont Street Associates, Limited Partnership (the "Partnership"), in cooperation with The Evangelical Baptist Benevolent and Missionary Society and the Tremont Temple Baptist Church (collectively, the "Society"), hereby submits to the Boston Redevelopment Authority this Draft Project Impact Report for the proposed Tremont Temple/90 Tremont Street project. The Partnership and the Society are referred to in this report as the "Applicant".

The Applicant proposes a unique development project for the Midtown Cultural District which unites a new commercial mixed-use building, Ninety Tremont Street, with a restored historic public resource, Tremont Temple Baptist Church. Through high quality urban design and an innovative financing structure, the 150 year old Tremont Temple will be able to continue its work, and an important historic downtown Boston location will gain a significant, contextual infill project.

This Draft Project Impact Report presents a development proposal for a new commercial building of sixteen stories to be constructed on the 90 Tremont Street site and in the air rights over the adjacent Tremont Temple Baptist Church, the "Proposed Project." The new construction reaches a height of 190'-6", contains approximately 145,400 square feet of commercial space, and when combined with the Temple's floor area of approximately 74,600 square feet, has a Floor Area Ratio (FAR) of 11.

Also included in this report are two variations of the proposed development scenario, an "As-of-Right" scheme at 154'-9" in height and FAR 8.9, and a "Substantial Accord" scheme, as recently defined within the Midtown Cultural District regulations, at 166'-8" high and FAR 9.6. These scenarios are identical to the Proposed Project in basic massing, that is setbacks and construction over the Temple, however, the As-of-Right scheme contains three fewer floors than the Proposed Project while the Substantial Accord contains two fewer floors. The As-of-Right and Substantial Accord schemes have been included herein for the purposes of comparison of the financial aspects and environmental impacts with the Proposed Project.

SECTION 2 following includes summary information on the Applicant, and legal and financial aspects of the project including financial analyses of the three development schemes.

SECTION 3 contains a description of the site, location and proposed program for the Tremont Temple/90 Tremont Street project. The unique structure of this project calls for the creation of a two-unit condominium with Tremont Temple Baptist Church and the Ninety Tremont Street building as discrete units. The Society plans to sell the Temple's basements and development air rights to the Partnership and use the proceeds to restore the

historic Temple facade and renovate its interiors. The Partnership will construct parking under both sites with commercial (retail on the first and second floors, office on floors 3 through 16) space above.

SECTION 4 presents the Public Benefits to be generated by this joint development which are summarized below:

- Tremont Temple Baptist Church

\$3.6 million to be applied to Tremont Temple's \$7.6 million renovation program for facade, Church proper and ancillary spaces, and to upgrade life safety and building systems.

- Historic Preservation

Tremont Temple's terra cotta and rusticated limestone facade will be cleaned, storefronts will be reconstructed to original configuration, and interior details and finishes will be restored in accordance with budgetary and code constraints.

- Cultural Contributions

Performing arts facilities and equipment in Converse Hall will be upgraded to accomodate increased usage by the public. Improvements will include sound, theatrical lighting, circulation and HVAC systems. Other proposed improvements include carpeting, seating, lobby, exterior illumination and signage, parking and off-street loading.

- Day Care

A 4,000 square foot child care center will be provided in the Proposed Project.

- Housing Creation

Development of an affordable/moderate residential project in Roxbury in partnership with Twelfth Baptist Church and Second African Meeting House Corporation, is proposed for the \$200,000 in housing linkage funds to be generated by the Proposed Project.

- Economic Benefits

Jobs linkage funds of \$50,000 to be contributed to English language and jobs training programs. Approximately 152 construction-related and 532 permanent jobs will be generated by the project. Taxes on the completed project will be approximately \$600,000 annually versus the current \$58,000 paid on the property.

- Open Space/Old Granary Burying Ground

A contribution of approximately \$40,000 of in-kind services for restoration and/or maintenance of the Old Granary Burying Ground has been proposed. Bosworth Street pedestrian improvements have also been proposed which include paving, lighting, signage, seating, plantings and an outdoor cafe for Ninety Tremont Street's restaurant.

- Urban Design

The current void in the historically strong Tremont Streetwall will be replaced with the contextual yet striking new mid-rise Ninety Tremont Street building. Its ground and second floors and its light-toned masonry facade will echo and complement Tremont Temple's two-level entry as well as its storefronts and unique facade.

SECTION 5 includes information pertaining to Regulatory Approvals and Permits, and community outreach. The rationale for requesting a height variance for three floors over the As-of-Right height (two floors over the Substantial Accord height) and an exception for the Proposed Project's FAR of 11 is presented in this section. The unique physical properties of the project site require exceeding the 155 foot height regulation to accommodate a density equal to the FAR 11 allowed under the Midtown Cultural District definition for Substantial Accord.

SECTION 6 presents the Transportation Component of this report. Because Tremont Temple/90 Tremont Street is not considered a large project in the downtown Boston area, impacts related to the Proposed Project do not represent considerable or detrimental effects on roadways, transit systems, or pedestrian and parking access.

SECTION 7 contains the Environmental Protection Component of this report. Potential impacts of the proposed Tremont Temple/90 Tremont Street project are summarized below and in several cases, are compared to impacts from As-of-Right and Substantial Accord schemes:

- Wind

A qualitative wind tunnel test was performed to evaluate the impact of Tremont Temple/90 Tremont Street on pedestrian wind speeds. No qualitative difference in smoke flow characteristics was observed between the proposed Tremont Temple/90 Tremont Street project and the As-of-Right scheme. In addition, the qualitative wind testing showed that building influence was confined only to streets near the building.

- Shadow

A shadow analysis was performed on existing and build conditions--Proposed Project, As-of-Right and Substantial Accord--to determine potential impacts. The times studied showing the Proposed Project creating shadows on areas of concern were at 9:00 AM on March 21, June 23, and September 23 on the Granary Burying Ground, and at noon on March 21 and December 22 on the One Beacon Street Plaza. The differences, however, between the shadows on these areas from the As-of-Right scenario, the Substantial Accord scheme, and the Proposed Project are minor. At noon, on June 22 and March 21 are the only times the Proposed Project results in greater shadows on Tremont Street sidewalks than the As-of-Right and Substantial Accord schemes.

- Daylight

A daylight analysis was conducted to estimate the effect of Tremont Temple/90 Tremont Street on the amount of daylight reaching the street level. Daylight studies were calculated from three vantage points. Overall, the average daylight obstruction from the three vantage points increases by 24 percent over existing conditions with the proposed configuration. There is, however, only minimal difference in daylight obstruction between the As-of-Right scheme and the Proposed Project.

- Air Quality

An air quality analysis was performed to determine impacts on the Tremont Temple/90 Tremont Street proposed 80-space parking garage at three receptors. The predicted contribution of the garage on pedestrian level air quality and on adjacent structures is less than 1.1 ppm and 0.8 ppm for one-and eight-hour periods respectively.

- Geotechnical and Groundwater

Foundation support of Ninety Tremont Street is expected to be by means of conventional footings with a high bearing pressure in consideration of the excellent bearing qualities of the glacial soils underlying the site. Measures will be taken to prevent and mitigate potentially adverse effects of the proposed below-grade construction.

- Noise

Although the uses envisioned for the Proposed Project are not likely to cause an appreciable increase in the ambient noise level, the building's design will incorporate noise attenuation measures.

- Construction

A Construction Management Plan will be submitted to the Boston Transportation Department (BTD) for approval prior to the actual start of construction. The plan will be in compliance with the BTD and Construction Management Program and the DPIR.

- Soil and Hazardous Waste

There is no indication of the presence of a release of oil or hazardous materials at either the 88 or 90 Tremont Street sites. Construction and solid waste generated by the Proposed Project will be disposed of in accordance with applicable regulations.

- Rodent Control

The proponent will contract with a licensed exterminator prior to beginning any work at the project. Rodent extermination will be carried on before, during, and at the end of completion of all foundation work for the Proposed Project, in compliance with city and state requirements.

SECTION 8 presents the Infrastructure Systems Component of this report which states that the existing Southern High Service (SHS) water supply system is adequate to satisfy the project demand for water. Either the Tremont Street sewer route or the Chapman Place route could accommodate the project's wastewater flows. It is not anticipated that new distribution capacity will be required in the Boston Edison Company (BECO) system to meet the specific requirements of the Tremont Temple/90 Tremont Street project. If the development team decides that steam is a cost effective manner of heating and/or cooling the proposed building, there appears to be ample excess capacity in the existing system to serve the project. The reduction in restaurant space from existing conditions is expected to result in a reduction in natural gas use. Discussions with New England Telephone representatives indicated that the Bowdoin CO has available switching capacity to accommodate the level of additional future load anticipated by the redevelopment of the Tremont Temple/90 Tremont Street site.

SECTION 9 contains the Urban Design Component which contains a description of the project's context and design objective, site information, photographs of the project area and the schematic designs of the project. The design of the Tremont Temple/90 Tremont Street project has evolved over the past 15 months as a result of numerous meetings with community groups, abutters, public agencies, and other interested parties.

Finally, SECTION 10 presents the Historic Resources Component which summarizes impacts of the Tremont Temple/90 Tremont Street project on surrounding historic districts, structures and open spaces. Also included in this section is little known information regarding Tremont Temple Baptist Church. In general, the proposed project will positively affect the surrounding historic resources due to its contextual design and detailing which will complement and enhance its neighbors. The addition of the project to the historic streetscape will also replace a currently detracting building and "missing tooth" on the historically strong Tremont Streetwall. The increased activity and values anticipated at the Tremont Temple/90 Tremont Street site will contribute to an increased vitality in the surrounding historic area.

In conclusion, the Applicant submits that this DPIR successfully illustrates the proposed Tremont Temple/90 Tremont Street's conformity to the goals and objectives of the Midtown Cultural District Plan and provides a comparison between an As-of-Right scheme (and in several cases a Substantial Accord scenario) and the Proposed Project. The analyses show that in most cases, the impacts for the Proposed Project are not materially different from the impacts which would be generated by an As-of-Right scheme.



GENERAL INFORMATION

2.1 Applicant Information

2.1.1 Project Identification

PROJECT NAME: TREMONT TEMPLE/90 TREMONT STREET

PROJECT ADDRESS: 76-98 Tremont Street
Boston, Massachusetts 02108

APPLICANT: 90 TREMONT STREET ASSOCIATES, L.P.
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Reverend Charles Hendricks
Mr. Dana Shattuck

In 1989, the Tremont Temple Baptist Church celebrated its 150th anniversary as one of the first congregations in the country to

have free pews and desegregated seating. The Temple was founded in 1839 by a group of Charles Street Baptist Church parishioners who denounced the Church's practice of barring blacks from the sanctuary. Their anti-slavery sentiment expanded to include the belief that it was the responsibility of the Church to advance social and moral reforms. The Temple's Historical Time Line is included in Appendix D, Tremont Temple Baptist Church, A Light in the City for 150 Years.

Throughout its history, the Temple has hosted celebrated evangelists, orators and distinguished performers. This tradition continues today as does the Church's doctrine of open religious worship and community service; the Temple's congregation represents virtually every cultural and ethnic community in Boston, with worshippers from more than 20 countries often attending services.

In addition to adult and youth religious training and activities, the Church is an active member of the American Association of Pastoral Counsellors; provides international orientation programs such as English language and employment-related training, and general assistance to newcomers to the country, including immigrants from Cambodia, Laos, the Philippines and India; sponsors a national community outreach program through three radio broadcasts per day; and is host to several support and alcohol abuse group meetings per week.

Tremont Temple was constructed in 1894 as a mixed-use building with the Church auditorium sandwiched by retail shops on the first floor and office space above. This innovative plan provided the capital resources to support the Church's operations for several decades. The Tremont Temple's physical structure, however, has experienced increasing deterioration since the late 1950's when the decision was made to offer the retail and office spaces to non-profit, Baptist-related users. Consequently, the need for substantial improvements has now become critical to enable the Church to continue its mission in its existing location into the next century.

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St. James Properties is a six year old regional development company with current or completed projects in Boston, Worcester, Newton, Cambridge and Springfield, Massachusetts; New York City and Syracuse, New York; Stowe, Vermont; North Conway, New Hampshire; Milwaukee, Wisconsin; and Scarborough,

Maine. In addition to Tremont Temple/90 Tremont Street, St. James is currently developing the following projects in Massachusetts.

- Chestnut Place, Worcester - A new 175,000 square foot office building in downtown Worcester in partnership with NYNEX Properties Company.
- Harrison Center, Springfield - A landmark 100,000 square foot commercial property located on Main Street in Springfield.

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2.1.3 St. James Properties' Boston Developments

Ninety Tremont Street is St. James Properties' first new construction project in Boston. St. James is the developer and owner of one other downtown Boston building, 274 Franklin/67 Batterymarch Streets, the company's current headquarters. In 1984, St. James acquired this 16,000 square foot circa 1878 Queen Anne style building at the corner of Franklin and Batterymarch Street in the heart of the Financial District. The building was renovated and two new floors were added to create a 22,000 square foot building on seven floors. Design of the project was handled by Skidmore, Owings & Merrill.

2.2 Legal Information

2.2.1 Legal Actions Pending

There are no legal judgments or actions pending concerning the proposed Tremont Temple/90 Tremont Street project.

2.2.2 History of Tax Arrears

St. James Properties has not been in the past, and is not now, in arrears relative to payment of real estate taxes for either the 90 Tremont Street property or for 274 Franklin/67 Batterymarch Street. Current records do show, however, that 274 Franklin/67 Batterymarch Street is technically in abatement arrears; taxes are current relative to the abated tax amount, which by definition is less than the full valuation tax amount.

As the Tremont Temple Baptist Church is a tax-exempt entity, tax arrears on 76-88 Tremont Street, Tremont Temple, does not apply.

2.2.3 Site Control

90 Tremont Street Associates, L. P. purchased the 90 Tremont Street property in September, 1987. The Partnership executed a Purchase and Sale Agreement with the Society for certain floor area within, and air rights over Tremont Temple. Copies of the deed for 90 Tremont Street and the Purchase and Sale Agreement between the Partnership and the Society, which also contains all restrictive covenants and contractual restrictions relative to the development, have been submitted to the Boston Redevelopment Authority under separate cover.

2.3 Financial Information

2.3.1 Financially Involved Participants

90 Tremont Street Associates, Limited Partnership is a Massachusetts Limited Partnership comprised of Christopher B. Fleming, Webb/St. James Ventures, a Limited Partnership, and Gerald S. Fineberg. The names and addresses of all partners,

both general and limited, follow:

Christopher B. Fleming
662 West Street
Carlisle, Massachusetts 01741

Charles F. Norton
39 Amherst Road
Wellesley, Massachusetts 02181

Gerald S. Fineberg
150 Causeway Street
Boston, Massachusetts 02114

2.3.2 Development Pro Formas

Following are summary financial analyses for the Proposed Project and for As-of-Right and Substantial Accord scenarios. A Development Budget and 10-Year Operating Projection are presented for each of the three schemes. In addition, a Rental Rate Schedule is included in the Proposed Project section which relates to all schemes. The full financial analysis of the for-profit component of the Tremont Temple/90 Tremont Street project has been submitted to the Boston Redevelopment Authority under separate cover.

The three summary financial analyses will illustrate the Applicant's basis for submitting a single alternative for Tremont Temple/90 Tremont Street; as shown in the following schedules, the project economics for the As-of-Right and Substantial Accord scenarios are not financially viable in the current financing environment. Although environmental and other analyses on the As-of-Right and Substantial Accord schemes are presented in this report, all such information is, as in this section, included for comparison purposes only.

Based on the following, and the fact that there are only minor environmental impact differences between the Proposed Project and the As-of-Right scheme (as illustrated in subsequent sections), the Applicant submits that the public benefits generated by the Proposed Project justify the incremental height required by this proposal (two floors above the Midtown Cultural District definition for Substantial Accord height).

Proposed Project: The Applicant presents the following financial analysis of the Proposed Project of FAR 11 which does not require incremental density other than that which is currently allowed under Midtown Cultural District Plan. The Development Budget, Figure 2.3-1, and 10-Year Operating Projection, Figure 2.3-2, are based on a project of 160,175 gross enclosed square feet (as opposed to the zoning gross square feet used in zoning and permit calculations.) Rental Rate Schedule, Figure 2.3-3, is also included and shows square feet and rental rates per floor for all three scenarios analyzed.

90 TREMONT STREET
BOSTON, MASSACHUSETTS
DEVELOPMENT BUDGET

ASSUMPTIONS:

GROSS FLOOR AREA: Commercial 160,175 GSF
Parking 26,890 GSF

TOTAL 187,065 GSF

RENTABLE FLOOR AREA: Retail 5,500 RSF
Office 139,930 RSF

TOTAL 145,430 RSF

ZONING SF (Incl. Temple): 220,000
LAND AREA: 19,920 SF
TOTAL PROJECT FAR: 11.0

PROJECT COMMENCEMENT: 01-Sep-87
PRE-CONST PERIOD: 34 MONTHS
CONSTRUCTION COMMENCEMENT: 01-Jul-90
CONSTRUCTION PERIOD: 18 MONTHS
PROJECTED OPENING: 01-Jan-92
EQUITY INVESTMENT: \$7,650,000
CONST/MINI PERM: \$43,342,224
INTEREST RATE: 10.50%
PERM LOAN @ 9.25%: \$45,000,000
INVESTOR RETURN: 16.6%
DEBT COVERAGE @ 1ST STAB YR: 1.10
STAB YEAR RATE OF RETURN: 9.6%

	TOTAL COST	/TOTAL GSF	/GSF COMM	/RSF COMM	% OF TPC
ACQUISITION (SCH 1).....	\$9,427,480	\$50.40	\$58.86	\$64.82	18.54%
Land/Buildings 5,533,960					
Additional Purchase Price 3,893,520					
DESIGN (SCH 2).....	2,007,641	10.73	12.53	13.80	3.95%
Architecture & Engineering 1,304,116					
Tenant Space Planning 309,000					
Reimbursables 64,525					
Other-Consultants 330,000					
CONSTRUCTION (SCH 3).....	25,044,910	133.88	156.36	172.21	49.25%
Site Work 251,000					
Base Building 16,017,500					
Interior Finishes 5,307,696					
Parking 1,600,000					
Temple Facade 100,000					
Construction Management 618,714					
Contingency 1,150,000					
MARKETING (SCH 4).....	1,526,482	8.16	9.53	10.50	3.00%
Commissions 979,545					
Direct Expenses 546,937					
ADMINISTRATION (SCH 5).....	3,022,529	16.16	18.87	20.78	5.94%
Project Administration 1,347,500					
Legal 400,000					
Accounting 42,000					
Real Estate Taxes 232,000					
Insurance 350,000					
Appraisals/Surveys/Studies 135,000					
Title/Closing Costs 100,000					
Linkage/Other Exactions 416,029					
FINANCE (SCH 6).....	895,404	4.79	5.59	6.16	1.76%
Loan Fees 466,436					
Other Financing Costs 301,468					
Interest Payments 127,500					
PROJECT CONTINGENCY.....	1,000,000	5.35	6.24	6.88	1.97%
CONSTRUCTION LOAN INTEREST.....	4,812,930	25.73	30.05	33.09	9.47%
OPERATING DEFICIT.....	3,110,393	16.63	19.42	21.39	6.12%
TOTAL PROJECT COST.....	\$50,847,769	\$271.82	\$317.45	\$349.64	100.00%

PAYMENT TO TEMPLE (including \$100,000 for
Temple facade listed above)..... \$3,611,488

Figure 2.3-1

90 TREMONT
BOSTON, MASSACHUSETTS
10-YEAR OPERATING PROJECTION

ASSUMPTIONS										
			ABSORPTION SCHEDULE			EXPENSES		COST/SF	OE/RET STOP	COST/SF
INCOME SOURCE	RSF	EFF RENT/SF	1-1-92	7-1-92	1-1-93					
Office	139,930	\$34.96	69,965	34,983	34,983	Leased		\$5.00	Office	\$9.00
Retail	5,500	\$69.55	5,500	0	0	Vacant		\$3.00	Retail	\$0.00
Parking Spaces	80	\$3,300.00	80	0	0	RE Taxes		\$4.00	Other	\$0.00
						Inflator		4%	Inflator	4%
LEASE TERMS						DEBT	PRINCIPAL	INT RATE	AMORT	YEARS
Lease Length-	50% 5-Yr, 50% 10-Yr		First Year-Mos		12	Mini Perm	\$43,342,224	9.25%	0	1-2
Fixed Rent Period-	5 Yrs		Stabilized Yr		3	Perm Mtg	\$45,000,000	9.25%	30	3-6
Lease Turnovers-	50% Stay 50% Roll		Rent Inflator		5%	Refin Perm	\$56,000,000	9.25%	30	7-10
	1	2	3	4	5	6	7	8	9	10
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	LEASE-UP	STAB YR	OPER	OPER	OPER	OPER	OPER	OPER	OPER	SALE
RENTAL INCOME										
Office *	3,494,563	5,661,191	5,661,191	5,661,191	5,661,191	6,626,674	7,225,274	7,225,274	7,225,274	7,225,274
Retail	382,500	382,500	382,500	382,500	382,500	488,178	488,178	488,178	488,178	488,178
Parking	264,000	277,200	291,060	305,613	320,894	336,938	353,785	371,475	390,048	409,551
Additional Rent	592,618	450,952	179,551	268,612	329,731	120,449	186,555	255,306	326,807	401,168
GROSS RENTAL INCOME	4,733,680	6,771,844	6,514,302	6,617,916	6,694,316	7,572,239	8,253,792	8,340,232	8,430,307	8,524,170
RENTAL CONCESSIONS	3,494,563	2,166,629	0	0	0	0	0	0	0	0
VACANCY LOSS @ 5%	0	0	283,060	283,060	283,060	331,334	361,264	361,264	361,264	361,264
NET RENTAL INCOME	1,239,118	4,605,215	6,231,242	6,334,856	6,411,256	7,240,905	7,892,528	7,978,969	8,069,043	8,162,907
OPERATING EXPENSES										
Leased Space	464,781	727,636	756,741	787,011	818,492	851,231	885,280	920,692	957,519	995,820
Vacant Space	157,421	0	0	0	0	0	0	0	0	0
Real Estate Taxes	200,000	375,000	600,000	654,356	680,530	707,751	736,061	765,504	796,124	827,969
TOTAL OE & RE TAXES	822,203	1,102,636	1,356,741	1,441,367	1,499,022	1,558,983	1,621,342	1,686,196	1,753,643	1,823,789
NET OPERATING INCOME	416,915	3,502,579	4,874,501	4,893,489	4,912,234	5,681,923	6,271,187	6,292,773	6,315,400	6,339,118
TURNING EXPENSES										
Commissions @ \$4/RSF	0	0	0	0	0	104,948	34,983	0	0	0
Tenant Imp @ \$20/RSF	0	0	0	0	0	524,738	174,913	0	0	0
NOI LESS TURNING EXP	416,915	3,502,579	4,874,501	4,893,489	4,912,234	5,052,238	6,061,292	6,292,773	6,315,400	6,339,118
DEBT SERVICE										
Mini Perm Int	3,527,308	4,009,156	0	0	0	0	0	0	0	0
Perm Mtg Int	0	0	4,442,447	4,442,447	4,442,447	4,442,447	5,528,379	5,528,379	5,528,379	5,528,379
NET CASH FLOW	0	0	432,054	451,042	469,787	609,791	532,913	764,394	787,021	810,739
DEBT COVERAGE RATIO	N/A	N/A	1.10	1.10	1.11	1.14	1.10	1.14	1.14	1.15
BLDG VALUE @ 8% CAP	N/A	N/A	60,931,263	61,168,615	61,402,931	71,024,036	78,389,833	78,659,664	78,942,499	79,238,969
RATE OF RETURN @ 95% OCCUPANCY (NOI/TPC)			9.6%							

* 5-year tenants receive 9 months free rent,
10-year tenants receive 12 months free.
Tenants pay operating expenses and
RE taxes during free rent periods.

Figure 2.3-2

90 TREMONT
BOSTON, MASSACHUSETTS
RENTAL RATE SCHEDULE

FLOOR	USE	GSF	EFFICIENCY	RSF	RENT/RSF	RENTAL RATES
Sub-Basemt	Parking	6,970	-	-	-	BLENDED
Basement	Parking	19,920	-	-	-	RETAIL
1	Ret/Cafe	6,730	37.15%	2,500	\$75.00	RENT=
2	Restrnt	6,730	44.58%	3,000	\$65.00	\$69.55
3	Office	6,970	93.97%	6,550	\$36.00	
4	Office	6,970	93.97%	6,550	\$36.50	
5	Office	6,970	93.97%	6,550	\$37.00	
6	Office	6,970	93.97%	6,550	\$37.50	
7	Office	6,915	94.14%	6,510	\$38.00	BLENDED
8	Office	6,515	94.40%	6,150	\$38.50	OFFICE
9	Office	6,515	94.40%	6,150	\$39.00	FACE RENT=
10	Office	6,345	94.56%	6,000	\$39.50	\$39.96
11	Office	15,545	95.59%	14,860	\$40.00	
12	Office	15,545	96.20%	14,955	\$40.50	
13	Office	15,545	96.20%	14,955	\$41.00	BLENDED
14	Office	15,365	96.16%	14,775	\$41.50	OFFICE
15	Office	15,365	96.16%	14,775	\$42.00	EFF RENT=
16	Office	15,180	96.18%	14,600	\$42.50	\$34.96

ASSUMPTIONS:

As-of-Right floor sizes are approximately as above without floors 14, 15 and 16.

Substantial Accord floor sizes are approximately as above without floors 15 and 16.

Rental Rates per floor are identical to above for both As-of-Right and Substantial Accord.

Figure 2.3-3

The Development Budget following shows the cost per square foot of gross enclosed commercial and parking floor area, gross enclosed commercial floor area, and rentable floor area. Also shown at the bottom of the schedule is the actual amount of funds to be generated for Tremont Temple from this project.

In the 10-Year Operating Projection, the relevant measures for financibility are the Rate of Return to total project cost in the first fully leased year, as shown at the bottom of the 1994 column. The standard return rate in the marketplace has been 10% until the recent softening in the market. As investors become more willing to accept slightly lower rates, the 9.6% rate of return initially generated by the proposed project should satisfy an investor desiring the long range appreciation which a first class downtown Boston building such as Ninety Tremont Street should yield.

It is important to note that the economics of the Proposed Project are at the minimum level of comfort in terms of project viability from the existing developer's and investors' points of view. The proposed FAR 12.6-14.6 project outlined in the September 1988 Tremont Temple/90 Tremont Street Project Notification Form was submitted because of the viability of its financial pro forma as well as the public benefits it generated, specifically the funds for Tremont Temple. In comparison to the cost and return measures presented above, the average of the originally proposed range of densities for the joint development had an approximately \$295 cost per square foot for approximately 200,000 gross enclosed square feet of commercial space, and over a 10% Rate of Return in the first stabilized year of operations. Finally, the quantifiable public benefits would have included approximately \$5 million to the Temple and nearly \$700,000 for housing creation, jobs programs, day care and the Granary Burying Ground.

As-of-Right: As shown on the following Development Budget, Figure 2.3-4, the \$358.43 development cost per square foot far exceeds the acceptable level to produce a viable, downtown project, air rights construction premium notwithstanding. Also shown is the decreased amount of funds which would be generated for Tremont Temple, \$2,215,242 or approximately \$1.4 million less than from the proposed project.

The 10-Year Operating Projection, Figure 2.3-5, shows a Rate of Return of only 8.5% and a permanent mortgage amount, generated according to debt coverage requirements, which is less than and consequently does not take out the construction loan amount--a fallacious scenario. For these reasons among others, this As-of-Right joint development scheme would not be a viable project.

Substantial Accord: The following Development Budget, Figure 2.3-6, and 10-Year Operating Projection, Figure 2.3-7, are virtually identical to the As-of-Right scheme in terms of

90 TREMONT STREET
AS-OF-RIGHT
DEVELOPMENT BUDGET

ASSUMPTIONS:

GROSS FLOOR AREA: Commercial 113,970 GSF
Parking 26,890 GSF

TOTAL 140,860 GSF

RENTABLE FLOOR AREA: Retail 5,500 RSF
Office 95,780 RSF

TOTAL 101,280 RSF

ZONING SF (Incl. Temple): 176,852
LAND AREA: 19,920 SF
TOTAL PROJECT FAR: 8.9

PROJECT COMMENCEMENT: 01-Sep-87
PRE-CONST PERIOD: 34 MONTHS
CONSTRUCTION COMMENCEMENT: 01-Jul-90
CONSTRUCTION PERIOD: 18 MONTHS
PROJECTED OPENING: 01-Jan-92
EQUITY INVESTMENT: \$6,125,000
CONST/MINI PERM: \$34,869,054
INTEREST RATE: 10.50%
PERM LOAN @ 9.25%: \$32,000,000
INVESTOR RETURN: 15.2%
DEBT COVERAGE @ 1ST STAB YR: 1.10
STAB YEAR RATE OF RETURN: 8.5%

	TOTAL COST	/TOTAL GSF	/GSF COMM	/RSF COMM	% OF TPC
ACQUISITION (SCH 1).....	\$8,031,234	\$57.02	\$70.47	\$79.30	19.66%
Land/Buildings	5,533,960				
Additional Purchase Price	2,497,274				
DESIGN (SCH 2).....	1,698,789	12.06	14.91	16.77	4.16%
Architecture & Engineering	1,089,263				
Tenant Space Planning	226,881				
Reimbursables	52,646				
Other-Consultants	330,000				
CONSTRUCTION (SCH 3).....	18,641,116	132.34	163.56	184.06	45.63%
Site Work	251,000				
Base Building	11,397,000				
Interior Finishes	3,665,316				
Parking	1,600,000				
Temple Facade	100,000				
Construction Management	477,800				
Contingency	1,150,000				
MARKETING (SCH 4).....	1,126,594	8.00	9.89	11.12	2.76%
Commissions	692,570				
Direct Expenses	434,024				
ADMINISTRATION (SCH 5).....	2,757,656	19.58	24.20	27.23	6.75%
Project Administration	1,347,500				
Legal	400,000				
Accounting	42,000				
Real Estate Taxes	232,000				
Insurance	350,000				
Appraisals/Surveys/Studies	135,000				
Title/Closing Costs	100,000				
Linkage/Other Exactions	151,156				
FINANCE (SCH 6).....	796,245	5.65	6.99	7.86	1.95%
Loan Fees	400,330				
Other Financing Costs	268,415				
Interest Payments	127,500				
PROJECT CONTINGENCY.....	1,000,000	7.10	8.77	9.87	2.45%
CONSTRUCTION LOAN INTEREST.....	4,431,308	31.46	38.88	43.75	10.85%
OPERATING DEFICIT.....	2,366,959	16.80	20.77	23.37	5.79%
TOTAL PROJECT COST.....	\$40,849,901	\$290.00	\$358.43	\$403.34	100.00%
PAYMENT TO TEMPLE (including \$100,000 for Temple facade listed above).....	\$2,215,242				
PROPOSED SCHEME NET TO TEMPLE.....	\$3,611,488				
DIFFERENCE IN PROCEEDS.....	(\$1,396,246)				

Figure 2.3-4



90 TREMONT
BOSTON, MASSACHUSETTS
10-YEAR OPERATING PROJECTION

ASSUMPTIONS										
INCOME SOURCE	RSF	EFF RENT/SF	ABSORPTION SCHEDULE			EXPENSES	COST/SF		OE/RET STOP	COST/SF
			1-1-92	7-1-92	1-1-93					
Office	95,780	\$34.14	47,890	23,945	23,945	Leased	\$5.00		Office	\$9.00
Retail	5,500	\$69.55	5,500	0	0	Vacant	\$3.00		Retail	\$0.00
Parking Spaces	80	\$3,300.00	80	0	0	RE Taxes	\$4.00		Other	\$0.00
						Inflator	4%		Inflator	4%
LEASE TERMS						DEBT	PRINCIPAL	INT RATE	AMORT	YEARS
Lease Length-	50% 5-Yr, 50% 10-Yr		First Year-Mos		12	Mini Perm	\$34,869,054	9.25%	0	1-2
Fixed Rent Period-	5 Yrs		Stabilized Yr		3	Perm Mtg	\$32,000,000	9.25%	30	3-6
Lease Turnovers-	50% Stay 50% Roll		Rent Inflator		5%	Refin Perm	\$40,000,000	9.25%	30	7-10
	1	2	3	4	5	6	7	8	9	10
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	LEASE-UP	STAB YR	OPER	OPER	OPER	OPER	OPER	OPER	OPER	SALE
RENTAL INCOME										
Office *	2,335,680	3,783,801	3,783,801	3,783,801	3,783,801	4,429,106	4,829,196	4,829,196	4,829,196	4,829,196
Retail	382,500	382,500	382,500	382,500	382,500	488,178	488,178	488,178	488,178	488,178
Parking	264,000	277,200	291,060	305,613	320,894	336,938	353,785	371,475	390,048	409,551
Additional Rent	455,885	368,724	177,419	218,997	262,237	120,449	167,218	215,858	266,443	319,052
GROSS RENTAL INCOME	3,438,065	4,812,225	4,634,780	4,690,911	4,749,432	5,374,671	5,838,376	5,904,705	5,973,865	6,045,976
RENTAL CONCESSIONS	2,335,680	1,448,121	0	0	0	0	0	0	0	0
VACANCY LOSS @ 5%	0	0	189,190	189,190	189,190	221,455	241,460	241,460	241,460	241,460
NET RENTAL INCOME	1,102,385	3,364,103	4,445,590	4,501,721	4,560,242	5,153,216	5,596,916	5,663,246	5,732,405	5,804,516
OPERATING EXPENSES										
Leased Space	326,813	498,056	517,978	538,697	560,245	582,655	605,961	630,200	655,408	681,624
Vacant Space	107,753	0	0	0	0	0	0	0	0	0
Real Estate Taxes	200,000	375,000	438,178	455,705	473,933	492,890	512,606	533,110	554,435	576,612
TOTAL OE & RE TAXES	634,565	873,056	956,156	994,402	1,034,178	1,075,545	1,118,567	1,163,310	1,209,842	1,258,236
NET OPERATING INCOME	467,820	2,491,047	3,489,434	3,507,319	3,526,064	4,077,670	4,478,349	4,499,936	4,522,562	4,546,280
TURNING EXPENSES										
Commissions @ \$4/RSF	0	0	0	0	0	71,835	23,945	0	0	0
Tenant Imp @ \$20/RSF	0	0	0	0	0	359,175	119,725	0	0	0
NET LESS TURNING EXP	467,820	2,491,047	3,489,434	3,507,319	3,526,064	3,646,660	4,334,679	4,499,936	4,522,562	4,546,280
EBT SERVICE										
Mini Perm Int	2,834,779	3,225,387	0	0	0	0	0	0	0	0
Perm Mtg Int	0	0	3,159,074	3,159,074	3,159,074	3,159,074	3,948,842	3,948,842	3,948,842	3,948,842
EBT CASH FLOW	0	0	330,361	348,245	366,990	487,587	385,837	551,094	573,720	597,438
EBT COVERAGE RATIO	N/A	N/A	1.10	1.11	1.12	1.15	1.10	1.14	1.15	1.15
LDG VALUE @ 8% CAP	N/A	N/A	43,617,928	43,841,482	44,075,797	50,970,877	55,979,365	56,249,195	56,532,030	56,828,500
RATE OF RETURN @ 95% OCCUPANCY (NOI/TPC)			8.5%							

5-year tenants receive 9 months free rent,
10-year tenants receive 12 months free.
Tenants pay operating expenses and
RE taxes during free rent periods.

Figure 2.3-5

90 TREMONT STREET
SUBSTANTIAL ACCORD
DEVELOPMENT BUDGET

ASSUMPTIONS:

GROSS FLOOR AREA: Commercial	129,515 GSF
Parking	26,890 GSF
TOTAL	156,405 GSF
RENTABLE FLOOR AREA: Retail	5,500 RSF
Office	110,555 RSF
TOTAL	116,055 RSF
ZONING SF (Incl. Temple):	191,154
LAND AREA:	19,920 SF
TOTAL PROJECT FAR:	9.6

PROJECT COMMENCEMENT:	01-Sep-87
PRE-CONST PERIOD:	34 MONTHS
CONSTRUCTION COMMENCEMENT:	01-Jul-90
CONSTRUCTION PERIOD:	18 MONTHS
PROJECTED OPENING:	01-Jan-92
EQUITY INVESTMENT:	\$6,600,000
CONST/MINI PERM:	\$37,764,215
INTEREST RATE:	10.50%
PERM LOAN @ 9.25%:	\$36,500,000
INVESTOR RETURN:	15.4%
DEBT COVERAGE @ 1ST STAB YR:	1.10
STAB YEAR RATE OF RETURN:	8.9%

	TOTAL COST	/TOTAL GSF	/GSF COMM	/RSF COMM	% OF TPC
ACQUISITION (SCH 1).....	\$8,500,981	\$54.35	\$65.64	\$73.25	19.22%
Land/Buildings	5,533,960				
Additional Purchase Price	2,967,021				
DESIGN (SCH 2).....	1,802,546	11.52	13.92	15.53	4.08%
Architecture & Engineering	1,161,547				
Tenant Space Planning	254,362				
Reimbursables	56,636				
Other-Consultants	330,000				
CONSTRUCTION (SCH 3).....	20,792,589	132.94	160.54	179.16	47.02%
Site Work	251,000				
Base Building	12,951,500				
Interior Finishes	4,214,946				
Parking	1,600,000				
Temple Facade	100,000				
Construction Management	525,143				
Contingency	1,150,000				
MARKETING (SCH 4).....	1,260,418	8.06	9.73	10.86	2.85%
Commissions	788,608				
Direct Expenses	471,811				
ADMINISTRATION (SCH 5).....	2,846,759	18.20	21.98	24.53	6.44%
Project Administration	1,347,500				
Legal	400,000				
Accounting	42,000				
Real Estate Taxes	232,000				
Insurance	350,000				
Appraisals/Surveys/Studies	135,000				
Title/Closing Costs	100,000				
Linkage/Other Exactions	240,259				
FINANCE (SCH 6).....	830,243	5.31	6.41	7.15	1.88%
Loan Fees	422,995				
Other Financing Costs	279,748				
Interest Payments	127,500				
PROJECT CONTINGENCY.....	1,000,000	6.39	7.72	8.62	2.26%
CONSTRUCTION LOAN INTEREST.....	4,565,058	29.19	35.25	39.34	10.32%
OPERATING DEFICIT.....	2,621,096	16.76	20.24	22.58	5.93%
TOTAL PROJECT COST.....	\$44,219,690	\$282.73	\$341.43	\$381.02	100.00%
PAYMENT TO TEMPLE (including \$100,000 for Temple facade listed above).....	\$2,684,989				
PROPOSED SCHEME NET TO TEMPLE.....	\$3,611,488				
DIFFERENCE IN PROCEEDS.....	(\$926,499)				

Figure 2.3-6

90 TREMONT
BOSTON, MASSACHUSETTS
10-YEAR OPERATING PROJECTION

ASSUMPTIONS											
INCOME SOURCE	RSF	EFF RENT/SF	ABSORPTION SCHEDULE			EXPENSES		COST/SF		OE/RET STOP	COST/SF
			1-1-92	7-1-92	1-1-93						
Office	110,555	\$34.43	55,278	27,639	27,639	Leased	\$5.00		Office	\$9.00	
Retail	5,500	\$69.55	5,500	0	0	Vacant	\$3.00		Retail	\$0.00	
Parking Spaces	80	\$3,300.00	80	0	0	RE Taxes	\$4.00		Other	\$0.00	
						Inflator	4%		Inflator	4%	
LEASE TERMS						DEBT	PRINCIPAL	INT RATE	AMORT	YEARS	
Lease Length-	50% 5-Yr.	50% 10-Yr	First Year-Mos		12	Mini Perm	\$37,764,215	9.25%	0	1-2	
Fixed Rent Period-	5 Yrs		Stabilized Yr		3	Perm Mtg	\$36,500,000	9.25%	30	3-6	
Lease Turnovers-	50% Stay	50% Roll	Rent Inflator		5%	Refin Perm	\$45,000,000	9.25%	30	7-10	
	1	2	3	4	5	6	7	8	9	10	
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
	LEASE-UP	STAB YR	OPER	OPER	OPER	OPER	OPER	OPER	OPER	SALE	
RENTAL INCOME											
Office *	2,718,906	4,404,628	4,404,628	4,404,628	4,404,628	5,155,812	5,621,546	5,621,546	5,621,546	5,621,546	
Retail	382,500	382,500	382,500	382,500	382,500	488,178	488,178	488,178	488,178	488,178	
Parking	264,000	277,200	291,060	305,613	320,894	336,938	353,785	371,475	390,048	409,551	
Additional Rent	501,539	395,915	186,070	235,601	284,824	120,449	173,689	229,059	286,644	346,532	
GROSS RENTAL INCOME	3,866,945	5,460,243	5,264,258	5,328,342	5,392,846	6,101,376	6,637,198	6,710,257	6,786,416	6,865,806	
RENTAL CONCESSIONS	2,718,906	1,685,722	0	0	0	0	0	0	0	0	
VACANCY LOSS @ 5%	0	0	220,231	220,231	220,231	257,791	281,077	281,077	281,077	281,077	
NET RENTAL INCOME	1,148,039	3,774,521	5,044,027	5,108,110	5,172,615	5,843,586	6,356,120	6,429,180	6,505,338	6,584,729	
OPERATING EXPENSES											
Leased Space	372,984	574,886	597,881	621,797	646,669	672,535	699,437	727,414	756,511	786,771	
Vacant Space	124,374	0	0	0	0	0	0	0	0	0	
Real Estate Taxes	200,000	375,000	500,000	522,184	543,072	564,795	587,386	610,882	635,317	660,730	
TOTAL OE & RE TAXES	697,359	949,886	1,097,881	1,143,981	1,189,740	1,237,330	1,286,823	1,338,296	1,391,828	1,447,501	
NET OPERATING INCOME	450,680	2,824,635	3,946,145	3,964,129	3,982,874	4,606,256	5,069,297	5,090,884	5,113,511	5,137,228	
TURNING EXPENSES											
Commissions @ \$4/RSF	0	0	0	0	0	82,916	27,639	0	0	0	
Tenant Imp @ \$20/RSF	0	0	0	0	0	414,581	138,194	0	0	0	
NOI LESS TURNING EXP	450,680	2,824,635	3,946,145	3,964,129	3,982,874	4,108,758	4,903,465	5,090,884	5,113,511	5,137,228	
DEBT SERVICE											
Mini Perm Int	3,071,776	3,493,190	0	0	0	0	0	0	0	0	
Perm Mtg Int	0	0	3,603,318	3,603,318	3,603,318	3,603,318	4,442,447	4,442,447	4,442,447	4,442,447	
NET CASH FLOW	0	0	342,827	360,811	379,556	505,440	461,018	648,436	671,063	694,781	
DEBT COVERAGE RATIO	N/A	N/A	1.10	1.10	1.11	1.14	1.10	1.15	1.15	1.16	
BLDG VALUE @ 8% CAP	N/A	N/A	49,326,817	49,551,616	49,785,931	57,578,199	63,366,217	63,636,047	63,918,882	64,215,352	
RATE OF RETURN @ 95% OCCUPANCY (NOI/TPC)											
8.9%											

5-year tenants receive 9 months free rent,
10-year tenants receive 12 months free.
Tenants pay operating expenses and
RE taxes during free rent periods.

Figure 2.3-7

economic viability; the development cost per foot is in excess of market standards, the Rate of Return is more than one point below target rates, and the permanent mortgage does not take out the construction loan. The resultant funds to the Temple under this scenario are approximately \$1 million less than from the proposed project.

SITE INFORMATION

3.1 Project Location

The Tremont Temple Baptist Church at 76-88 Tremont and the 90-98 Tremont Street site are bounded by Tremont Street, Bosworth Street and the Omni Parker House in the northernmost block of the Midtown Cultural District. The site is located within Boston's Financial District, one block from the intersection of Tremont and Beacon streets, walking distance to the State House, City Hall and Government Center, Suffolk County Court House, other Financial District office buildings, Washington Street retail corridor, hotels and restaurants and numerous historic sites.

Access to the site is convenient by both private and public transportation. The site is at the center of Boston's public transportation system, equidistant (3 blocks) to the four major subway stations which connect all subway lines and both commuter rail stations, as shown in Figure 3-1, Transportation Map. In addition, the site allows for easy access and egress by automobile without the necessity of having to travel on the Central Artery.

3.2 Project Area

Following are the metes and bounds descriptions of the two parcels constituting the project area. 76-88 Tremont Street is bounded and described as follows:

NORTHWESTERLY:	By Tremont Street, ninety-one feet, eight inches;
NORTHEASTERLY:	by land now or formerly of Stillman Willis, the dividing line running through the middle of the brick partition wall, sixty-eight feet, six inches;
NORTHWESTERLY:	again by land now or formerly of Stillman Willis, Five feet, six inches;
NORTHEASTERLY:	again by land now or formerly of Ward Nicholas Boylston, sixty-six feet, eight inches;
SOUTHEASTERLY:	in part by land now or formerly of Mary Perkins and in part by land formerly of Lephaniah Spurr, in all, one hundred and one feet, six inches;

SOUTHWESTERLY: by land now or formerly of Lephaniah Spurr, sixty-seven feet, three inches;

NORTHWESTERLY: by land now or formerly of Thomas Brewer, four feet, four inches; and

SOUTHWESTERLY: by land now or formerly of Thomas Brewer, sixty-eight feet, eight inches.

90-98 Tremont Street (also including 2-3 Bosworth Street) is bounded and described as follows:

WESTERLY: on said Tremont Street, sixty-three and $35/100$ (63.35) feet;

NORTHERLY: Sixty-eight and $75/100$ (68.75) feet;

EASTERLY: Four and $33/100$ (4.33) feet; and

NORTHERLY: Again, forty-four and $25/100$ (44.25) feet, said last three bounds being by land now or late of Evangelical, Baptist Benevolent & Missionary Society, the lines passing in part through brick partition walls;

EASTERLY: on land now or formerly of J. R. Whipple Corporation by a line passing through the middle of a brick partition wall fifty-six and $9/12$ (56 $9/12$) feet; and

SOUTHERLY: on Bosworth Street, one hundred and fifteen and $52/100$ (115.52) feet.

3.3 Site Description

Existing conditions on the project site include the 1894 Tremont Temple structure--an eight story, masonry clad, steel-framed building on a 12,948 square foot plot of land. Tremont Temple, although suffering from deferred maintenance and the aging process in general, is structurally sound, which, with the investment of capital resources and establishment of a building management plan, will likely stand for another 95 years.

The 90 Tremont Street property includes the two story remains of two narrow brick buildings which originally occupied the 6,972 square foot plot of land. The 4 $1/2$ and 5 story buildings were truncated in the late 1950's which rendered the



structures visually detrimental to the surrounding area. A Locus Map is included as Figure 3-2.

3.4 Proposed Development

The proposed development of the abutting properties owned by the Partnership and the Society which constitutes the Tremont Temple/90 Tremont Street project is as follows:

- (a) The Partnership will purchase from the Society the existing basement and sub-basement of 76-88 Tremont Street and the development air rights required to construct a new building in the air space above the Temple.
- (b) The land under both 88 Tremont and 90 Tremont streets will be submitted to a condominium association. The Society will own the remaining Temple property (floors 1-7) as one condominium unit and the Partnership will own the basement parking levels in both buildings and all of the new construction as a second condominium unit.
- (c) The Partnership will build a new 16 story building on the 90 Tremont Street site alongside the Temple to a height of 119 feet, and from that height up to 190'-6" spanning over both the Temple and the 90 Tremont Street site. The existing Temple basement and the basements to be created on the 90 Tremont Street site will be utilized for parking for tenants of Ninety Tremont Street during weekday working hours and for the Temple in the evenings and on weekends.
- (d) The Society will use the sales proceeds from the Partnership to fund as much of the Temple's facade and interior renovation program as possible. The facade renovation program includes masonry cleaning overall, upper window repair or replacement and restoration of the original storefront configuration on the first and second floors. The interior improvements program for Tremont Temple includes the refurbishing of Converse Hall's surfaces and furnishings and the upgrading of its sound and lighting systems; the creation of a double-height entrance lobby and central grand staircase; the renovation of Lorimer Hall into a ground floor, full service, multi-function room with new kitchen and toilet facilities; improvements to upper floor Church office, classroom and counselling spaces; and general upgrading of HVAC, elevators, electrical, plumbing and safety systems.

Depending on the total sales proceeds paid to the Temple, certain renovation and stabilization work will be executed while other work will be phased or undertaken as funds become available.



Figure 3-2

LOCUS MAP

Scale: 1" = 1'-0"

TREMONT TEMPLE / 90 TREMONT STREET

Table 3-1 following presents the existing and proposed building quantities of the project.

TABLE 3-1
BUILDING QUANTITIES

<u>Building Quantities</u>	<u>Existing</u>		<u>Proposed</u>
	<u>Tremont</u>	<u>90 Tremont</u>	<u>Combined Site</u>
Site Area, SF	12,948	6,972	19,920
Height, ft.	125	26	190'- 6" (1)
Number of Stories	9	2	16
Gross Floor Area, GSF	77,500	13,000	220,000
Floor Area Ratio	6	2	11
Rear Yard, ft.(2)	--	--	15
Setbacks, ft.(2)	--	--	25, 27, 29
Loading Bays	0	0	1
Parking Spaces	0	0	80
<u>Building Uses (GSF)</u>	<u>Current Uses</u>		<u>Proposed Uses</u>
Church (3)	77,500	0	70,600
Commercial Office	0	0	140,400
Retail	0	6,500	1,500
Restaurant	0	6,500	3,500
Day Care	0	0	4,000

-
- (1) 210'-6" to top of mechanical penthouse
 (2) New air rights construction over Temple
 (3) Includes Church auditoriums, classrooms and offices

PUBLIC BENEFITS

By virtue of the Tremont Temple Baptist Church's strategy to realize its property's value through the sale of the air rights and basements, a public-private partnership has been created without public investment. Since its inception, the unique partnership of the Tremont Temple/90 Tremont Street project has been voluntary, rather than mandated by public policy.

Direct and indirect benefits from the project extend much farther than to the partners. The most important public benefit of the Tremont Temple/90 Tremont Street project is inherent in the very structure of the joint development. Physical and operational improvements to the Temple will benefit its parishioners, patrons of performing arts and the arts community itself, as well as visitors to and users of the surrounding Tremont Street area.

Capital benefits to the Temple are readily quantifiable and are listed below. The less quantifiable, albeit, equally important benefits to the Church, the cultural community, proponents of quality urban and historic environments, and Boston's public in general are also presented in the following pages.

It should be understood that the following sections relate to the proposed joint development project only; as illustrated in Section 2.3.2, without approval of a project of at least 220,000 gross square feet (FAR 11) at this site, the opportunity for any type of financially viable joint project would be precluded. Thus, it would become necessary for the developers to return to a single-site project on 90 Tremont Street only which would eliminate the benefits to Tremont Temple. In addition, a single-site project, with either an As-of-Right floor area of 69,720 square feet or a Substantial Accord floor area of 76,692 square feet, both containing less floor area than the 100,000 square foot threshold which triggers linkage requirements, would preclude linkage contributions for housing, jobs programs and child care.

4.1 Tremont Temple Baptist Church

Through the sale of the Temple basements and air rights, The Society will be able to partially fund an interior renovation program as well as restore its historic facade. In addition, modern technical systems, on-site parking, a loading dock and disposal facilities will be provided by the Ninety Tremont Street building for the Temple's use. Sales proceeds to the Church will total approximately \$3.6 million, less than half of its \$7,660,000 exterior and interior renovation budget. These funds, however, will be invested first to restore the facade and storefronts, then for prioritized building systems and stabilization work, in accordance with local building and fire codes. Such work may include:

- Elevator/circulation, HVAC, electrical and plumbing systems and safety improvements;

- Renovations to the Church proper and ancillary spaces including repairs to the Baptistry;
- Building entrance lobby, first floor and multi-purpose room reconfiguration and fit-out;
- Renovations to office and support facilities for religious and community service uses; and
- Building and program management to accommodate potential sources of capital from cultural events, day care and fund raising activities.

4.2 Historic Preservation

The most important historic resources benefit to be derived from the Tremont Temple/90 Tremont Street project is the restoration of the landmark 95-year old Beaux Arts, Second Renaissance Revival Tremont Temple. Designed in 1894 by Clarence Blackall and George Newton, this rare example of a Florentine Style, mixed-use building contributes to the historic Tremont Street area as a singularly prominent facade in the Tremont Streetwall, as shown in Figure 4.2-1. The distinguished architectural firm of Notter, Finegold + Alexander has been retained to design all aspects of this renovation.

The total cost for both exterior and interior restoration work for the Temple has been estimated to be approximately \$7,660,000 including all soft costs and contingencies (but not including the \$1 million cost to fully restore the Casavant organ or the \$1 million endowment reserve once anticipated.) Although the Temple will not be able to execute its full restoration program with the funds to be generated from this proposal, it is committed to investing its resources according to a prioritized work program. As the facade and storefront reconfiguration are priorities of the Temple, costs related to such work will be invested first. Other renovation work required, not including the facade, is valued at approximately \$7.3 million. Such work will be undertaken as funds allow and in the order of priority as required by existing conditions within the Temple and in accordance with local building and life safety codes.

The restoration work is divided below into five categories with the estimated budget listed for each: (i) the facade, (ii) the storefronts, (iii) Converse Hall, (iv) building systems, and (v) additional work.

4.2.1 Facade

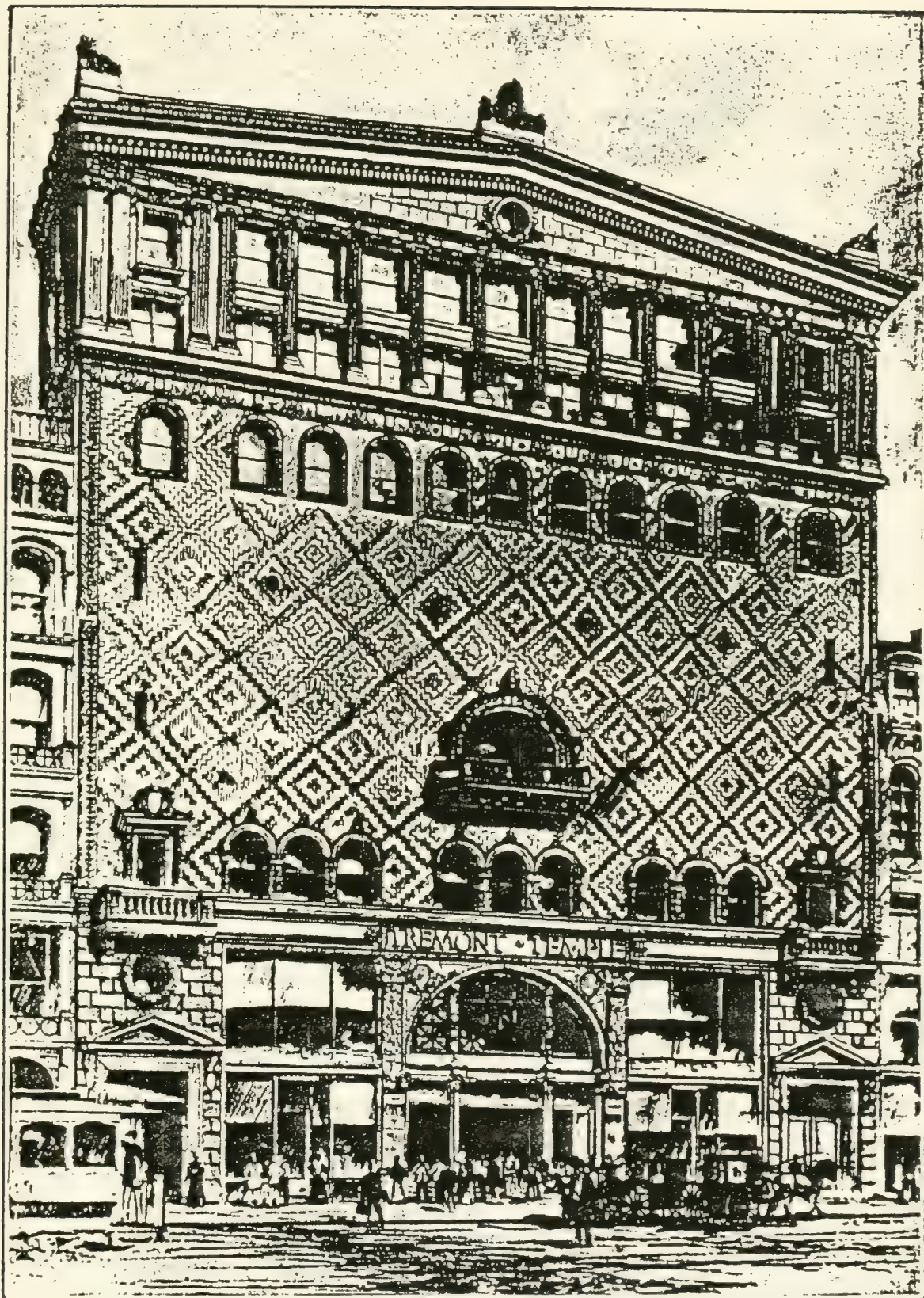
The highly ornamented Tremont Temple facade consists of rusticated Indiana limestone and fifteen colors of diamond patterned terra cotta bricks. Approximately \$150,000 is to be

Humanities (OAH) have identified the need for performance facilities of the size and configuration of Converse Hall. The Temple will meet with the Boston Cultural Corporation as well as the Task Force and OAH to discuss scheduling cultural events and program ongoing performances in the grand auditorium. With both physical and management improvements to Converse Hall, the Temple intends to increase its usage by the public considerably, possibly as much as three afternoons and two evenings per week. In addition to the planned physical improvements to Converse Hall (enhancing its desirability as a classic performance space), the following improvements specifically related to performing arts and other cultural usage have been planned:

- New sound system
- Theatrical lighting upgrade
- Refurbished seating
- New carpeting on aisles
- Refinished lobby surfaces
- Repairs to Casavant organ
- HVAC and plumbing improvements
- Circulation system upgrade
- Direct loading dock access for both Converse and Lorimer Halls
- Upgrade of fire protection/life safety systems for public assembly usage
- New double-height entrance/lobby area with central grand staircase to Converse Hall
- Exterior illumination of facade
- New exterior and interior signage

4.3.2 Lorimer Hall

Lorimer Hall, the Tremont Temple's 3,600 square foot first floor function room, will be furnished with movable seating and flexible partitions to accommodate several types and sizes of functions. The multi-purpose hall as well as a reconfigured first floor hospitality suite and related spaces will incorporate new kitchen and toilet facilities for more efficient use of the Temple by the public. Lorimer Hall, with its grand columns, carved molding and elegant beamed ceiling will be made available for cultural and community events, as



TREMONT TEMPLE, BOSTON, MASS.

circa 1894

Figure 4.2-1

invested in the facade to accomplish the following:

- Masonry - terra cotta, limestone and stucco - cleaning, repair, recaulking and repointing
- Resetting of keystone at architrave
- Replacement or repair, priming and painting of windows, floors 3 through 7

4.2.2 Storefronts

Approximately \$200,000 of the sales proceeds will fund the following:

- Removal of marquee and interior illuminated projecting sign
- Demolition of existing storefront infill material
- Storefront restoration to original configuration
- Replacement, repair, priming and painting of cast iron
- Installation of new lighting, signage
- Stained glass window repair

4.2.3 Converse Hall

This elegant auditorium seats 1,800 amid ornately carved wood paneling, marbleized pilasters, stained glass windows and an intricately molded plaster ceiling. Its lobby or narthex is over 1,200 square feet in size and has a curved ceiling with a Pompeian motif, panelled and stuccoed walls, and marble detailing. The total cost for renovating Converse Hall has been estimated at approximately \$1,250,000. The Temple will allot a portion of the sales proceeds it receives to Converse Hall work in accordance with priority needs and code requirements. The following items comprise the full renovation program for Converse Hall and the narthex:

- Repair of marbleized plaster wall panels
- Sanding and refinishing of carved oak pilasters and paneling
- Stained glass window repair
- Ornamental plaster and stuccoed wall and ceiling repair
- Cleaning and restoration of frescos and ornamental wall painting
- Repair and waterproofing of baptistry

- Replacement of missing gold leaf
- Resurfacing and painting of interior finishes
- Repair of terrazzo
- New carpeting on aisles
- New sound system
- Upgraded lighting

4.2.4 Building Systems

Tremont Temple is in need of major systems improvements as well as building surfaces and materials stabilization including structural, mechanical, elevator/circulation, electrical, plumbing and fire protection systems. Minor cracks and leaking of Tremont Temple's roof and pediment need repair which may be combined with the construction of the structural support for the air rights building extension of Ninety Tremont Street. The mechanical systems, including air conditioning, general electrical and plumbing systems, need upgrading and may utilize shared components with the new Ninety Tremont Street building (such as a multi-celled cooling tower) where feasible. The Temple must replace their existing elevators in accordance with building code regulations, as well as make code-related egress improvements. Most importantly, the Temple's automatic fire protection system must be upgraded through the installation of a new smoke and fire alarm system with sprinklers throughout.

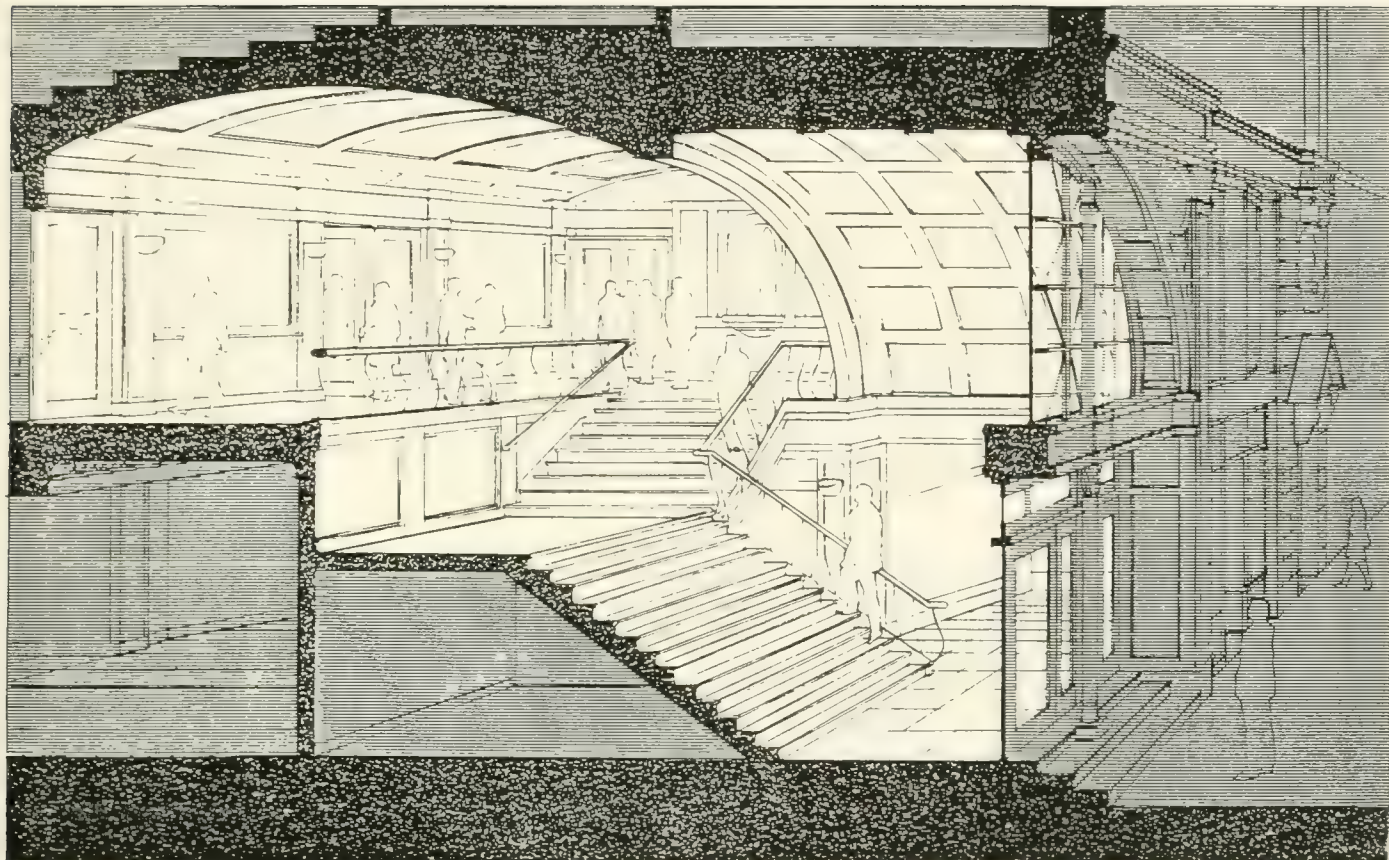
Since the current Temple structure was originally designed in 1894, fire protection has been an extremely important consideration for the Church. The existing building is the fourth structure on the site occupied by Tremont Temple Baptist Church. The first was destroyed by fire in 1853, the second destroyed by fire in 1879 and the third destroyed by fire in 1893. The Blackall and Newton Tremont Temple was designed to be, and remains today, as fireproof as technologically possible for its vintage; the building is steel frame construction with girders which are covered in cement and encased in terra cotta.

The total budget required for the work described above is approximately \$4,310,000. Tremont Temple will allot a portion of the sales proceeds it receives to systems and stabilization work in accordance with priority needs and code requirements.

4.2.5 Additional Work

Several other items of interior work are included in Tremont Temple's renovation program including the following:

- Demolition/reconfiguration of first floor staircases and double-height lobby as shown in Figure 4.2-2, multi-



PROPOSED DOUBLE-HEIGHT CENTER ENTRANCE INTO TREMONT TEMPLE

Figure 4.2-2

function room and support facilities including kitchen, toilets, furnishings and equipment

- Interior renovations to Church office and counselling spaces, floors 5 and 6
- Surface asbestos removal from ceiling and floor tiles, pipe insulation, etc.

The estimated budget for the items listed above is approximately \$1,750,000. Tremont Temple will allot a portion of the sales proceeds it receives for the additional work in accordance with priority needs and code requirements. As shown above, the total \$3.6 million in estimated proceeds to Tremont Temple (approximately \$3,250,000 not including facade restoration costs) is less than half of the estimated \$7,660,000 total renovation budget (approximately \$7.3 million budget not including facade restoration costs) required. The Temple is committed, however, to undertaking the most cost effective stabilization possible with the funds it receives and will complete its full renovation program as funds become available.

The necessity for an immediate investment in the Temple structure convinced the Partnership and the Society to propose this innovative and complex joint development to the City because of the relatively timely fashion with which proceeds will flow to the Temple. With the immediate investment in the stabilization of Tremont Temple underway, the Temple will continue to pursue the more time-consuming, lengthy grant proposal and fund-raising processes which could potentially extend a decade or longer. To rely solely on such funding sources for its immediate stabilization requirements would result in irreversible damage to the Temple structure and to the future of the Church itself.

4.3 Cultural Contributions

The Tremont Temple/90 Tremont Street project will represent an important contribution to the Midtown Cultural District as well as to Boston's inventory of historic resources. The grand interiors of Tremont Temple, especially Converse and Lorimer Halls, will be more attractive, accessible and technically equipped for performing arts and other cultural uses. The Ninety Tremont Street building will represent support and service facilities for such uses, as well as for the Church. A visual and fine arts program will also be incorporated into the plans for the new construction.

4.3.1 Converse Hall

As it stands today, Converse Hall is considered to be one of the most beautiful auditoriums in New England. The Midtown Cultural District Task Force and the City's Office of Arts and

well as for rehearsal and swing space for performing arts groups.

4.3.3 Ninety Tremont Street Facilities

Ninety Tremont Street's underground parking facility, which is accessed from Bosworth Street, will be made available at night and on weekends for events at Converse and Lorimer Halls and for Tremont Temple patrons. The off-street loading dock and compactor/dumpster, to be located directly adjacent to the auto drop-off area for the valet parking garage, will also provide much improved delivery and access for unloading of performance equipment and special supplies. Direct access into the Temple will also be provided via a rear corridor and entrance from the loading dock/dumpster/auto drop-off area into the main corridor on Tremont Temple's first floor, close to the elevators.

The planned restaurant in Ninety Tremont Street will also offer convenience for users of the Temple's facilities, especially for pre- and post-event dining.

4.3.4 Visual and Fine Arts Program

Ninety Tremont Street's exterior and interior and the Bosworth Street improvements will be unified through the establishment of a coordinated visual and fine arts program. Artwork will be incorporated into, rather than merely applied to both interior and exterior surfaces and architectural features of the building. As Tremont Temple's usage and decoration are primarily ecclesiastical, Ninety Tremont Street's artwork will certainly be distinct from, yet will respect that of the Temple.

4.4 Day Care

The Partnership and the Society will jointly create a child care center in accordance with the Office for Children and Midtown Cultural District guidelines. The full-service, 4,000 square foot center will be located on one of the upper three floors of the Temple.

4.5 Housing Creation

In lieu of contributions to the Neighborhood Housing Trust, the Applicant has proposed to undertake a housing creation project in Roxbury using as seed monies, the approximately \$200,000 of Tremont Temple/90 Tremont Street housing linkage funds. The plan for the proposed affordable residential development plan will be carried out in cooperation with the BRA, the Neighborhood Housing Trust, Dudley Street Neighborhood Initiative (DSNI) and Second African Meeting House (SAMH). SAMH is the non-profit housing development arm of Tremont Temple's sister church, the Twelfth Baptist Church of Roxbury, a leader in the Roxbury community with extensive experience in

affordable housing development and management.

Bill Jones, who heads Codman Square Housing Development Corporation, and is a board member of Massachusetts Housing Finance Agency, is a parishioner of the Twelfth Baptist and is extremely active in SAMH. His knowledge of and experience with complex financing arrangements for affordable housing development and management have been and will continue to be an important contribution to the proposed affordable residential development. Other members of the affordable housing development team include: James Dawson who heads SAMH, Rev. Michael Haynes, Pastor of Twelfth Baptist Church, St. James Properties and Notter, Finegold + Alexander Architects.

SAMH currently owns a parcel of land in the Core Area of the Dudley Street Neighborhood, at the corner of Judson and West Cottage streets, which is surrounded by several vacant, City-owned, or otherwise underutilized sites as shown in Figures 4.5-1 and 4.5-2. A proposal was made to DSNI in April of 1989 to gain control of up to 86,800 square feet of these parcels through DSNI's eminent domain power. The proposal is to combine these parcels with the Twelfth Baptist's 9,340 square foot property under three potential scenarios as shown in the following Figures 4.5-3, 4.5-4 and 4.5-5 and outlined below:

- Option 1: 20,365 SF Site
 12 Units
- Option 2: 33,139 SF Site
 27 Units
- Option 3: 96,138 SF Site
 58 Units

DSNI recently released their Master Plan for the entire Dudley Street area, followed by a request for proposals from developers interested in two potential housing sites in other Dudley Street area sections. The disposition of the sites required for the Applicant's proposed residential development will be negotiated concurrently with the Tremont Temple/90 Tremont Street approvals phase. DSNI may, however, issue a request for proposals for the Judson/West Cottage streets sites to maintain a consistent process.

In any case, certain project parameters will apply, such as:

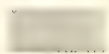
- Goal for 50% affordable and 50% moderate units.
- Home ownership, cooperative housing or rental units, or some combination, will be offered.
- Predominance of 3-bedroom, 1 1/2 bath, family-oriented units with 1 parking space each is planned.

DUDLEY STREET NEIGHBORHOOD INITIATIVE



Figure 4.5-1

OWNERSHIP STATUS



TWELFTH BAPTIST

CITY OF BOSTON

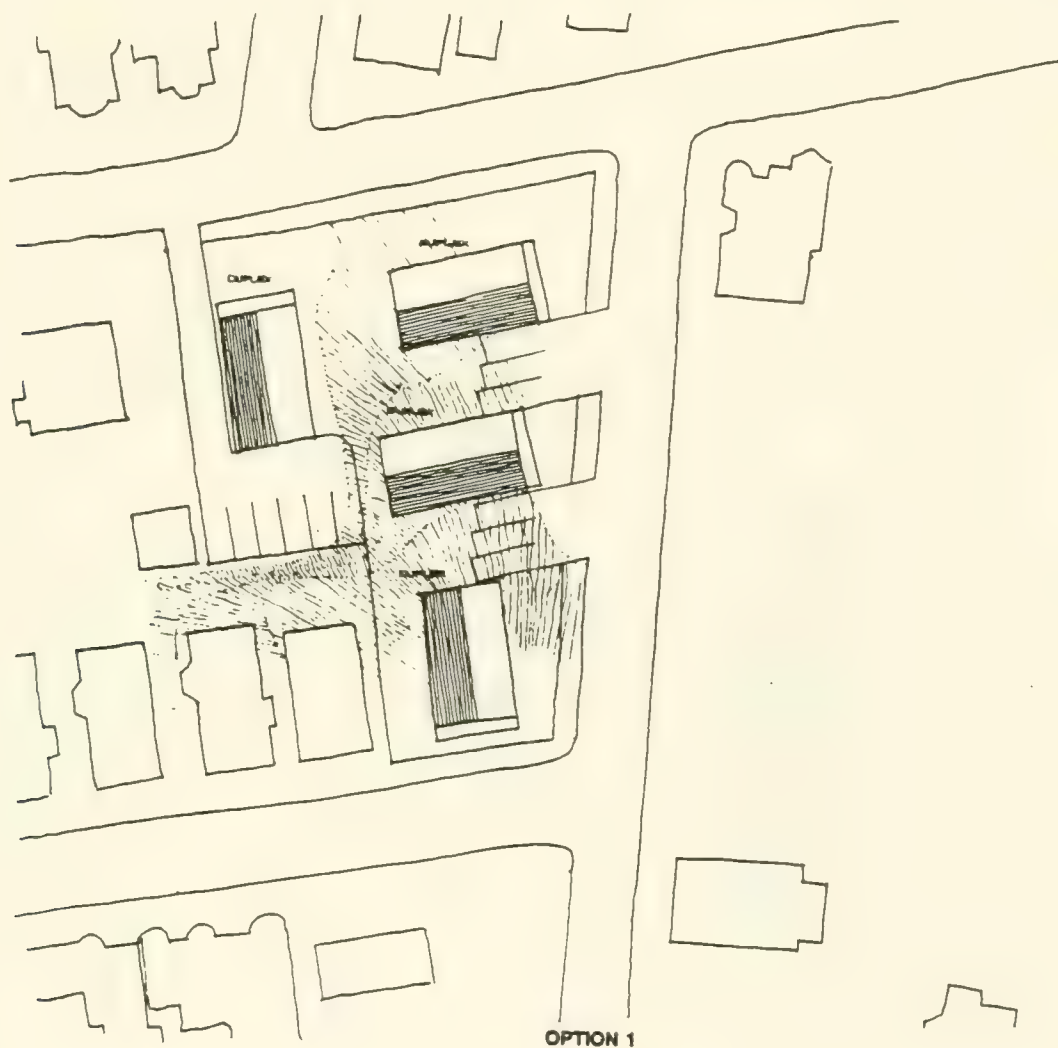


PRIVATE



TAX ARREARS

Figure 4.5-2



OPTION 1

20,365 SF

DUDLEY SQUARE HOUSING

NOTTER FINEGOLD + ALEXANDER

Figure 4.5-3

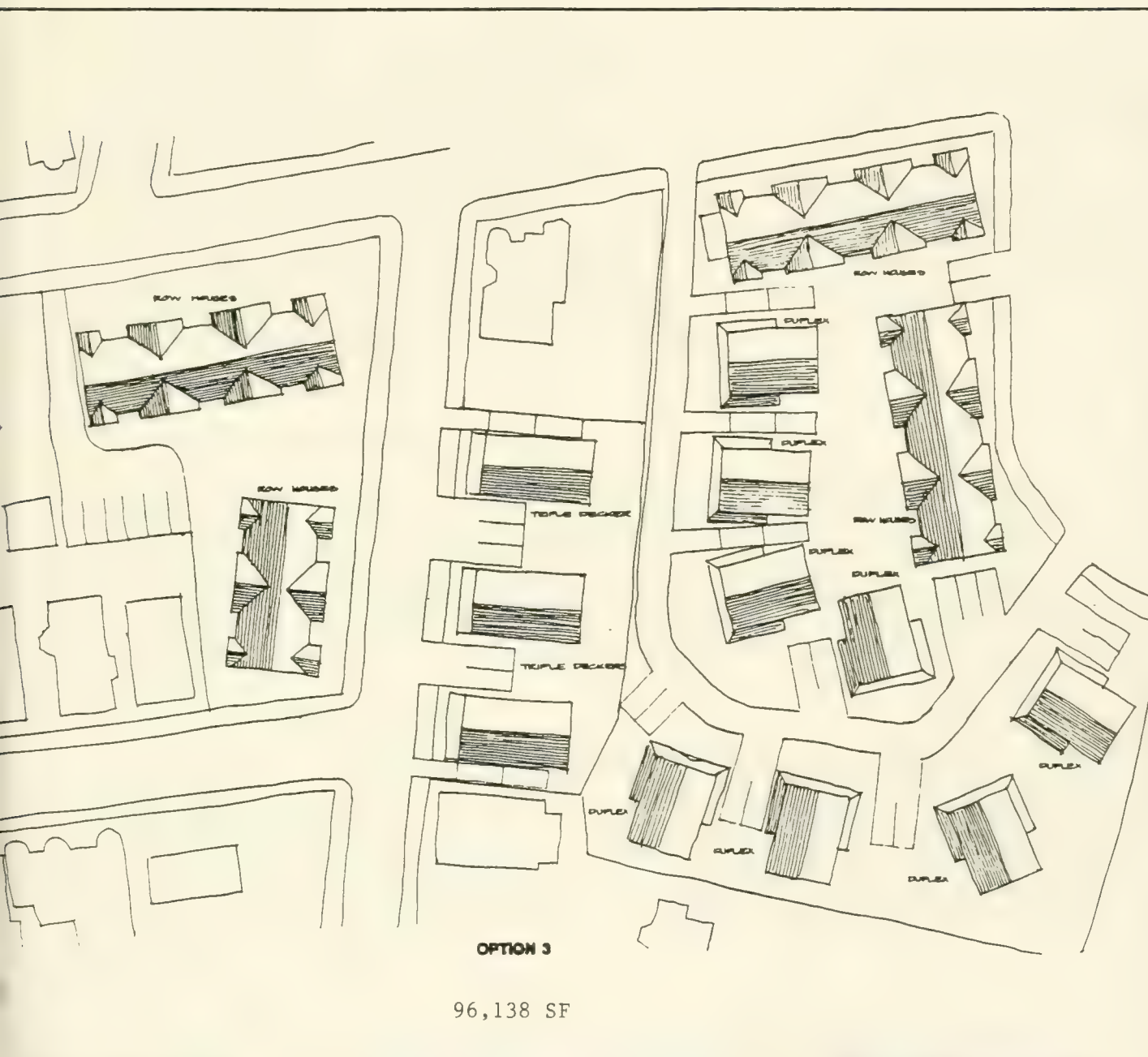


33,139 SF

DUDLEY SQUARE HOUSING

NOTTER FINEGOLD + ALEXANDER

Figure 4.5-4



DUDLEY SQUARE HOUSING

NOTTER FINEGOLD + ALEXANDER

Figure 4.5-5



- Configuration to be a combination of detached duplexes and triple deckers and attached rowhouses, as shown in the designs on the following pages.

Notter, Finegold + Alexander will again perform architectural services on behalf of the Applicant, calling upon their extensive experience creating imaginative housing solutions for both public and private sector projects. The firm's commitment to the design and production of sensitive and well-constructed affordable housing is evidenced in the sketches presented in Figures 4.5-6, 4.5-7, 4.5-8 and 4.5-9. The designs represent Notter, Finegold + Alexander's submittal as finalist in a pre-manufactured affordable housing design competition sponsored by the BRA and Public Facilities Department last year. The applicant intends to utilize these concepts, if not the designs themselves, in planning the Judson/West Cottage Streets Development.

4.6 Economic Benefits

4.6.1 Jobs Linkage

The Tremont Temple/90 Tremont Street project will generate approximately \$50,000 in jobs linkage funds. Upon recommendation from the Mayor's Office of Jobs and Community Services, the Applicant will make a contribution to be earmarked for English language training programs targeted to Chinatown and other area residents, rather than create a similar but significantly smaller scale program.

4.6.2 Jobs Programs

Compliance with the Boston Residents Jobs Ordinance will ensure that construction jobs generated by the joint development will be more accessible to Chinatown and other area residents. Morse Diesel has been retained for construction consulting and management services and has a strong record of compliance with the City's resident job policies. In addition, the Boston-for-Boston Jobs Program will be promoted to tenants of Ninety Tremont Street.

4.6.3 Employment

During the construction phase of Tremont Temple/90 Tremont Street, it is estimated that approximately 152 jobs will be generated at the construction site. This figure assumes that 27% of the \$28 million construction cost for the 18 month project represents the total amount of construction wages generated. When this amount is divided by the average annual construction wage, 152 construction jobs result.

Upon completion, it is estimated that Tremont Temple/90 Tremont Street will provide for approximately 532 new jobs. Because the floor area and number of employees in Tremont Temple will



DUDLEY SQUARE HOUSING

NOTTER FINEGOLD + ALEXANDER

Figure 4.5-6

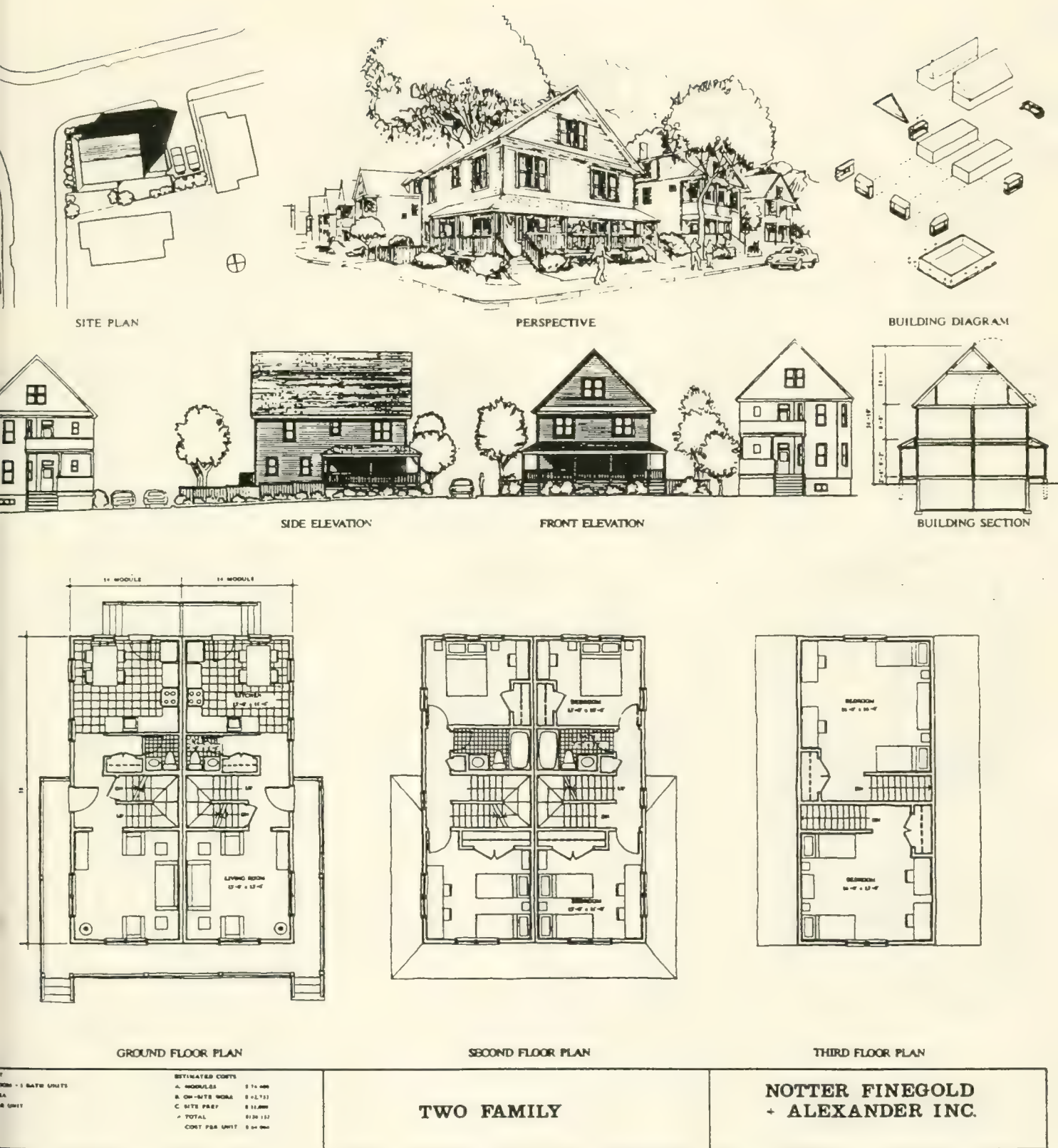


Figure 4.5-7



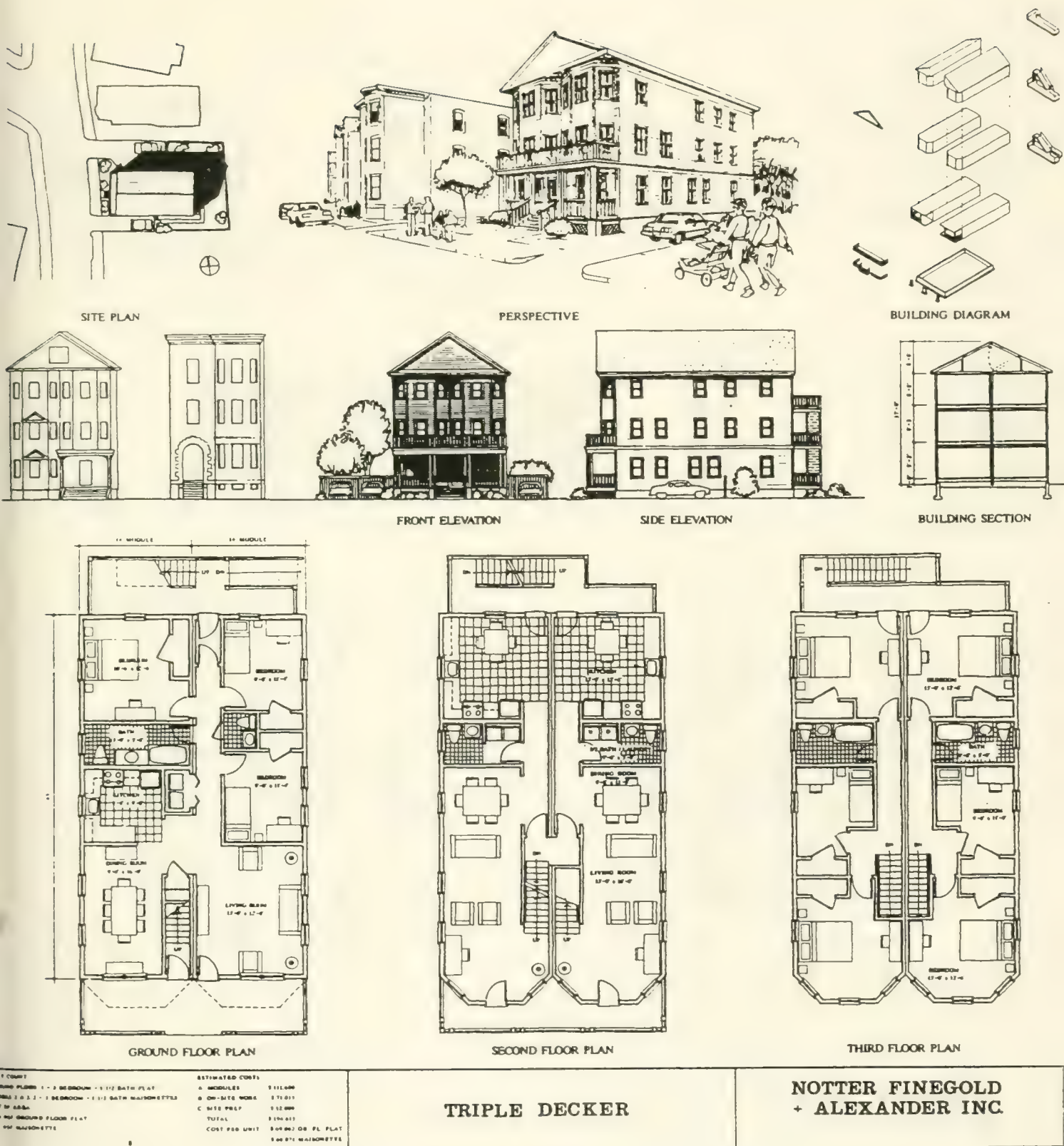


Figure 4.5-8

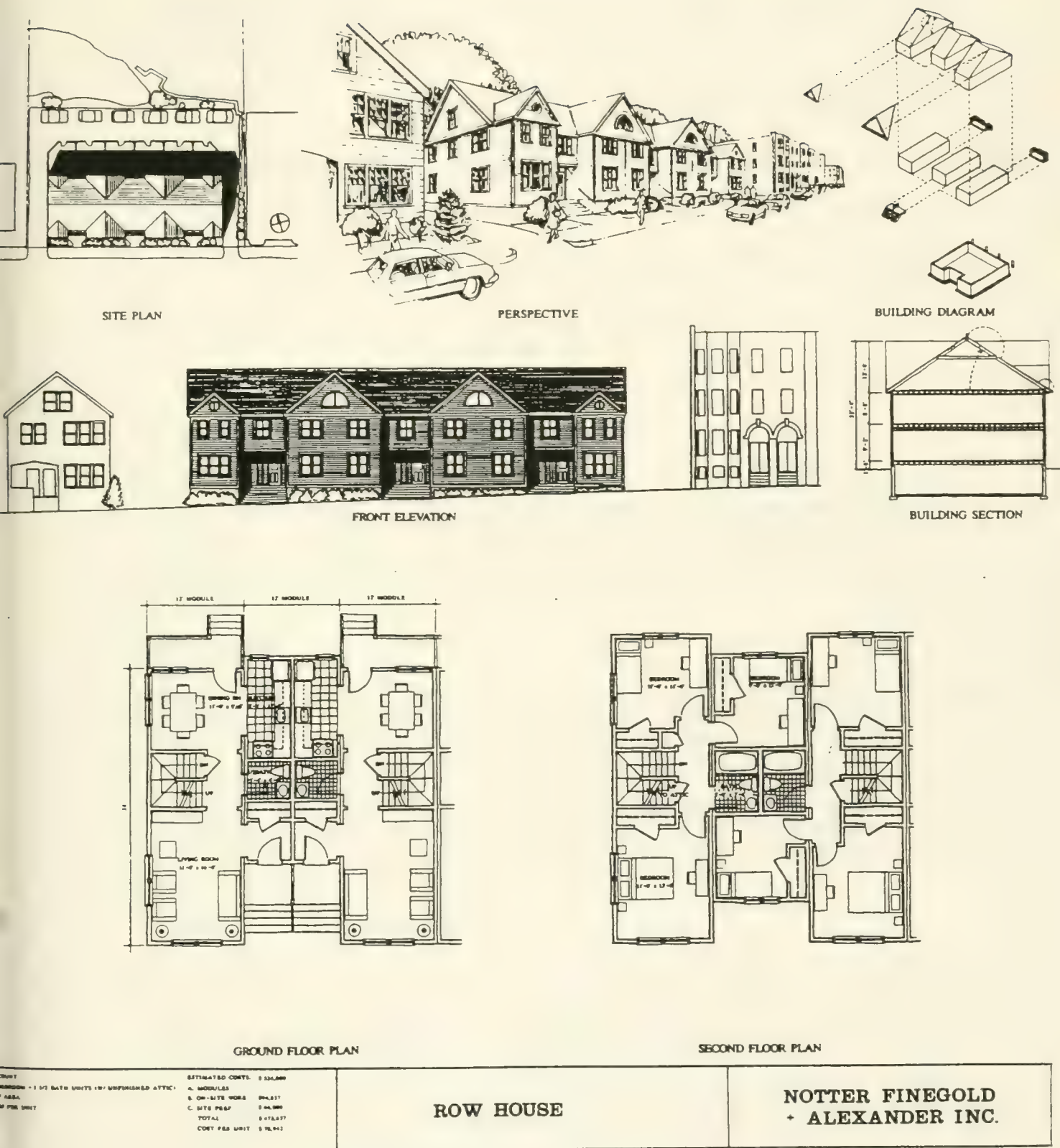


Figure 4.5-9

not change significantly, the net increase in Temple related jobs may only reflect the increased usage of Converse and Lorimer Halls for cultural use, and the new day care center. Permanent jobs were estimated as follows:

- Office: 140,400 GSF x 90%/250 Rentable Square Feet (RSF) per job = 505 jobs
- Retail/Restaurant: 5,000 GSF x 90%/400 RSF per job = 11 jobs
- Valet Parking: 80 cars/25 cars per job = 3 jobs
- Cultural: New on-site job estimate from increased Converse, Lorimer Halls use = 1 job
- Daycare: 4,000 GSF/85 SF per child/
4 children per job = 12 jobs

4.6.4 Taxes

Following completion of construction and lease-up, the annual real property taxes for the commercial component of Tremont Temple/90 Tremont Street are expected to be approximately \$600,000. The existing taxes paid on 90 Tremont Street are less than one-tenth the future amount, or \$58,000. The difference of \$542,000 will be a direct benefit to the City, on an annual basis, from the project.

4.7 Open Space

Tremont Temple/90 Tremont Street will contribute directly and indirectly to the open space goals of the Midtown Cultural District. By providing physical improvements to the Granary Burying Ground and Bosworth Street, new and increased usage of these spaces will be encouraged both day and night. In addition, the sensitively designed project, with its substantial building setbacks, ground floor treatments and upper level terraces, will preserve access to light and air for both users of the development and pedestrians.

4.7.1 Old Granary Burying Ground

The Applicant is a board member of the Friends of the Granary Burying Ground, Inc. and has contributed to all of its efforts to date. The Applicant has also proposed to make a financial contribution of either capital resources and/or in-kind services for restoration of the Granary, to be commensurate with that of the 73 Tremont project contribution or approximately \$.30 per square foot of rentable space in the Proposed Project. The approximately \$40,000 contribution will be donated in accordance with the Parks and Recreation Department's preference for in-kind services and may include lawn, security and lighting improvements and implementation of

a tree program, and/or contributions to annual maintenance costs, as per the following Friends materials, Figures 4.7-1 and 4.7-2.

4.7.2 Tremont and Bosworth Street Improvements

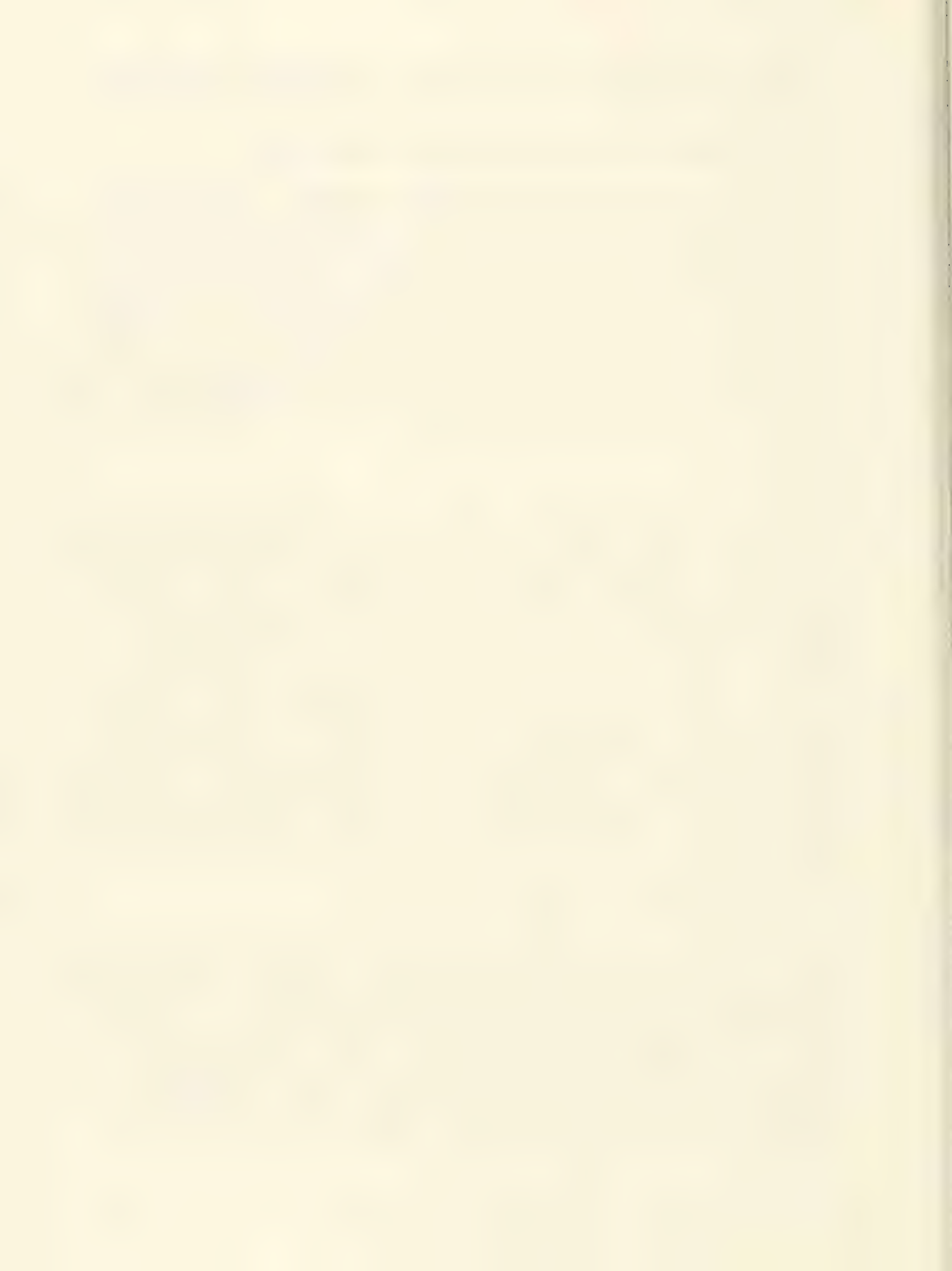
Since the inception of the Tremont Temple/90 Tremont Street project, the Applicant has proposed to create a pedestrian-oriented way on Bosworth Street from Tremont Street to Chapman Place. Pedestrian amenities to be provided include an enlarged sidewalk for outdoor cafe seating for Ninety Tremont Street's restaurant, public seating, urban plaza paving and plantings. New lighting and signage are being considered for the Bosworth Street improvements which would extend around to the repaved and repaired Tremont Street sidewalk abutting the site. The landscape design for Bosworth Street will be managed and sponsored by the Applicant in cooperation with the Parker House Hotel and the Abbey Group, owners of the 45 Province Street project and the Province House Park.

4.8 Urban Design

Tremont Temple/90 Tremont Street will serve to visually improve and enhance the physical experience along Tremont and Bosworth streets with the renovated Tremont Temple as well as contextually appropriate new construction on the 90 Tremont Street site. Improvements are also planned for the Granary Burying Ground and for a Bosworth Street pedestrian way. Notter, Finegold + Alexander's plans for the renovation of Tremont Temple will reveal the brilliance of its historic facade. The renovation plans for Tremont Temple's facade call for not only restoration of the storefronts to their original configuration, but also the removal of several detracting "modern" improvements such as the interior illuminated sign, marquee and window mounted air conditioning units. Robert A.M. Stern Architects, in association with Jung/Brannen Associates, has designed a truly Boston building for Ninety Tremont Street, one which will convey a sense comparable to the solidity and permanence that is found in the best office buildings of Boston's past.

4.8.1 Preservation of District's Character

Urbanistically, Ninety Tremont Street accomplishes far more than simply introducing a striking new building in Midtown; the structure will effectively rebuild and strengthen the now eroded streetwall at the historically solid corner of Tremont and Bosworth streets. The substantial new addition will also reknit the Tremont-Bosworth-Chapman-School streets block in an architecturally organic essay. With Stern's attention to detail, Ninety Tremont Street will sensitively complement both of its abutters, Tremont Temple and the Bosworth Building (Parker House Annex), as well as neighboring buildings in the district.



GRANARY BURYING GROUND COST ESTIMATE FOR RESTORATION

GRAVE MARKER RESTORATION

Treatments to stones, tombs,
monuments to stabilize artifacts.
Estimated to involve 1,500 of 2,348
markers in the Granary

• Gravestone conservation treatments including resetting, cleaning, repairs	\$175,000	
• Tomb treatments – structural repairs and conservation	<u>\$ 50,000</u>	
Total		\$225,000

LANDSCAPE RESTORATION

• Redesign Franklin monument area	\$ 30,000	
• Redesign Revere monument area	10,000	
• Replace existing path system	100,000	
• Implement tree program	23,000	
• Implement new lawn program	13,000	
• Repair drainage system	3,000	
• Improve security lighting	5,000	
• Install handicap access	<u>10,000</u>	
Total		\$194,000

RENOVATION OF TREMONT WALL AND FENCE

• Reset granite wall	<u>\$150,000</u>	
Total		\$150,000

COMPLETE RESTORATION COST (design and build)

\$569,000

Figure 4.7-1

GRANARY BURYING GROUND

COST ESTIMATE FOR

ANNUAL MAINTENANCE

DAILY MAINTENANCE NEEDS

• Litter pick-up	\$ 8,000	
• Leaf and limb clean-up:		
• Weeding		
• Lawn crew, mow and trim	11,000	
Trash removal and dumping	<u>3,000</u>	
Total		\$22,000

ANNUAL NEEDS

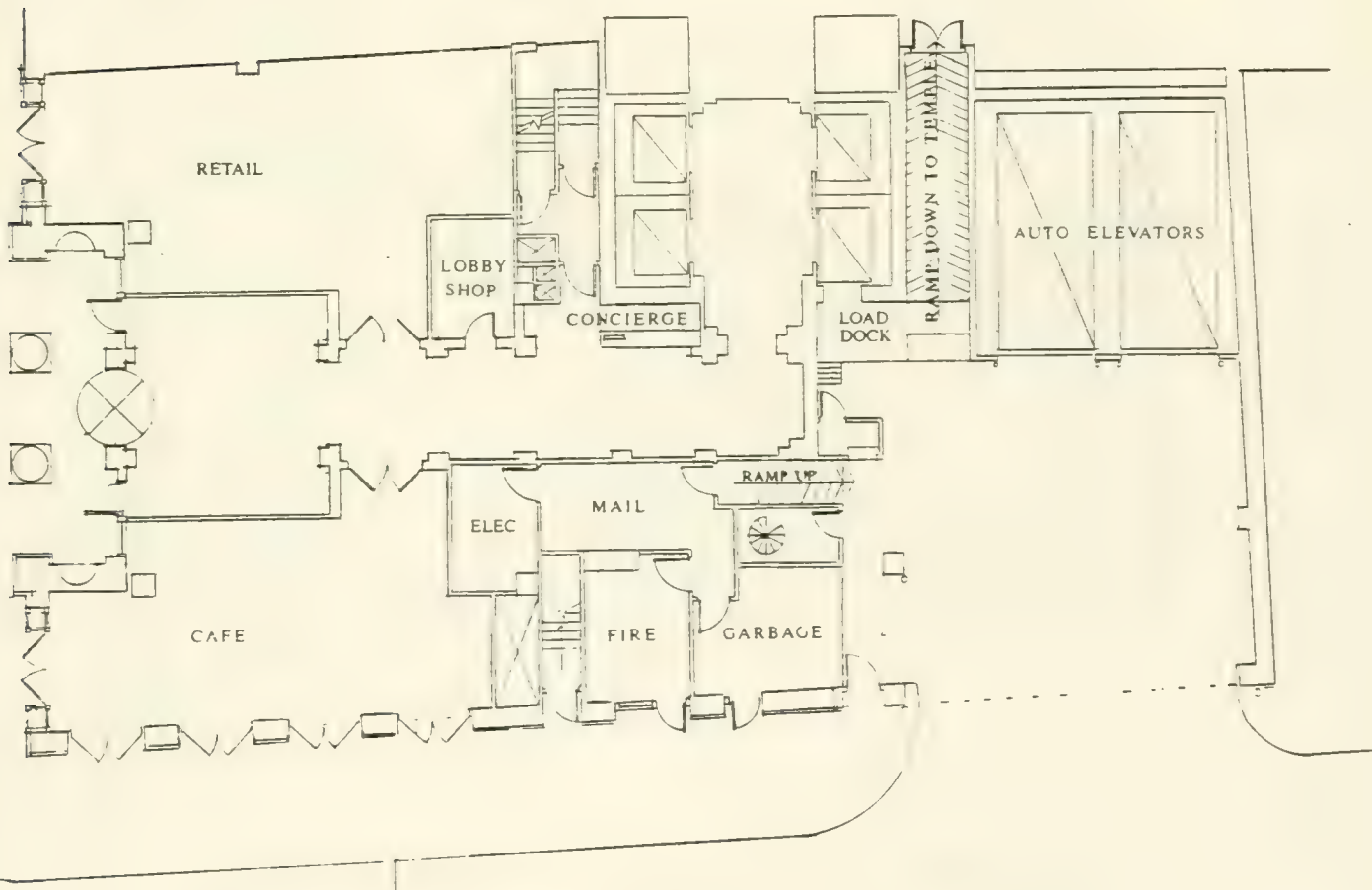
• Clean catch basin	\$ 2,000	
• Tree pruning	3,500	
• Tree fertilization	2,500	
• Lawn fertilization	<u>1,000</u>	
Total		\$ 9,000
Less: City of Boston		
Lawn Maintenance	(11,000)	
Combined Total		<u><u>\$20,000</u></u>

Figure 4.7-2



4.8.2 Pedestrian Level Uses

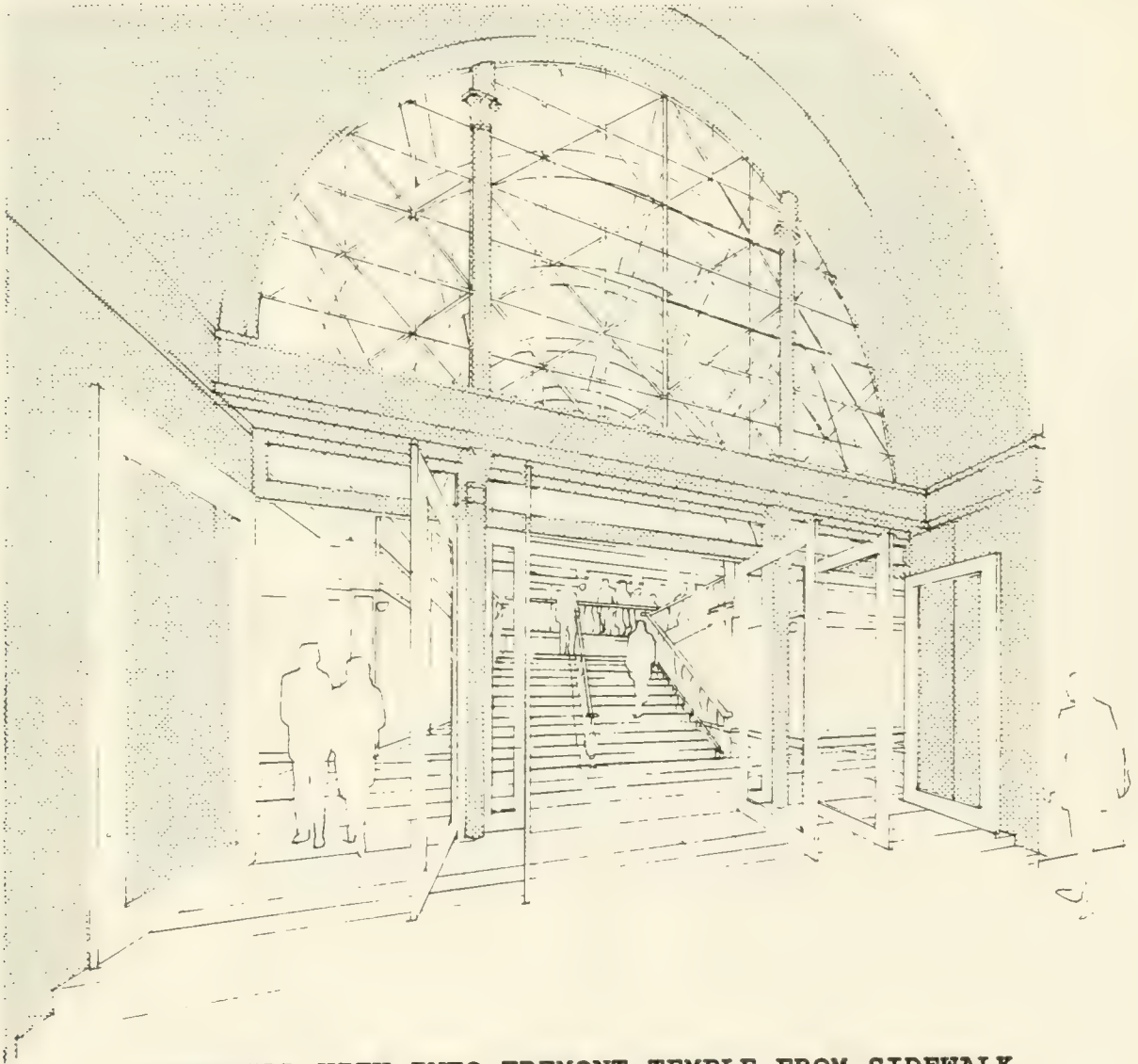
As shown in Figure 4.8-1, the main entrance into the office lobby at Ninety Tremont Street will be marked by two grand columns defining a recessed arcade which will shelter tenants and their visitors from the elements. Flanking the central entrance will be a retail shop to one side and Ninety Tremont Street's restaurant on the opposite side. Both of their recessed entrance areas will have doors opening directly onto the Tremont Street sidewalk, storefront display windows, lighting and quality signage. In addition, the restaurant will wrap around to the Bosworth Street elevation and offer outdoor dining through four sets of glazed french doors, thus contributing to full visual access and a lively ground level atmosphere throughout the year.



NINETY TREMONT STREET GROUND FLOOR

Figure 4.8-1

The double-height entrance lobby planned for Tremont Temple will also provide visual access from the street, up the central grand staircase and into the lobby of Converse Hall with its Classical details, vaulted ceiling and elegant murals. The effect of the new lobby design will be especially striking during evening events as light from the interior will illuminate the sidewalk and street area in front of the Temple's entrance, as shown in Figure 4.8-2.



POTENTIAL VIEW INTO TREMONT TEMPLE FROM SIDEWALK

Figure 4.8-2

4.8.3 Preservation of Tremont Temple's Integrity

As a historian and a traditionalist architect, Robert Stern recognizes the landmark quality of Tremont Temple. The design of Ninety Tremont Street's air rights extension over the Temple carefully defers to the Temple's importance in its details as well as its massing--it is set back a substantial 25 feet from the pediment of the Temple to allow the strong form of the Temple facade to retain its prominence in the streetwall. Additional setbacks on the top three floors of the Temple extension combined with the sight lines and grade changes of the narrow Tremont Street corridor further minimize the presence of the extension above the Temple.



VIEW OF THE PROPOSED PROJECT

Figure 4.8-3

REGULATORY APPROVALS AND PERMITS

5.1 Zoning Regulations

5.1.1 Zoning Relief

"As a Proposed Project within the Downtown/Northern Avenue Corridor Area to erect a building or structure having a gross floor area of not less than fifty thousand (50,000) square feet", the Tremont Temple/90 Tremont Street project is subject to the provisions of Boston Zoning Code Article 31, Development Review Requirements. In addition, due to its location within the Midtown Cultural District, the project is subject to the provisions of Article 38, Midtown Cultural District Plan.

Table 5-1 below is a summary of zoning relief which will be required for the proposed project with related discussion following:

TABLE 5-1

ZONING RELIEF

<u>Provision</u>	<u>Regulation</u>	<u>Proposal</u>	<u>Relief</u>
Height	155'-0"	190'-6"	Variance
FAR	10	11	Exception
Setback *	15' above 155'	10'-8" above 155'	Variance

* Pertains to Ninety Tremont Street component only.

Height:

At the proposed project height of 190'-6", the building is effectively three floors higher than the As-of-Right height regulation and two floors higher than the Substantial Accord height definition. The Applicant's rationale for the variance request is that the proposed project fulfills all conditions required for granting a variance as provided in Boston Zoning Code Article 7, Section 7-3 (a) through (d), as follows:

- (a) The special circumstance or condition applying to the land or structure requiring the variance relates to the 60 foot high void created by the Church auditorium. If not for this void, which is peculiar to the structure but not the neighborhood, the entire amount of floor area in the proposed project above 155 feet in height would fit within the As-of-Right height regulation. Thus, if the variance is not granted, the Applicant will be deprived of the allowed floor area for this site.
- (b) The alternative to building over Tremont Temple to the

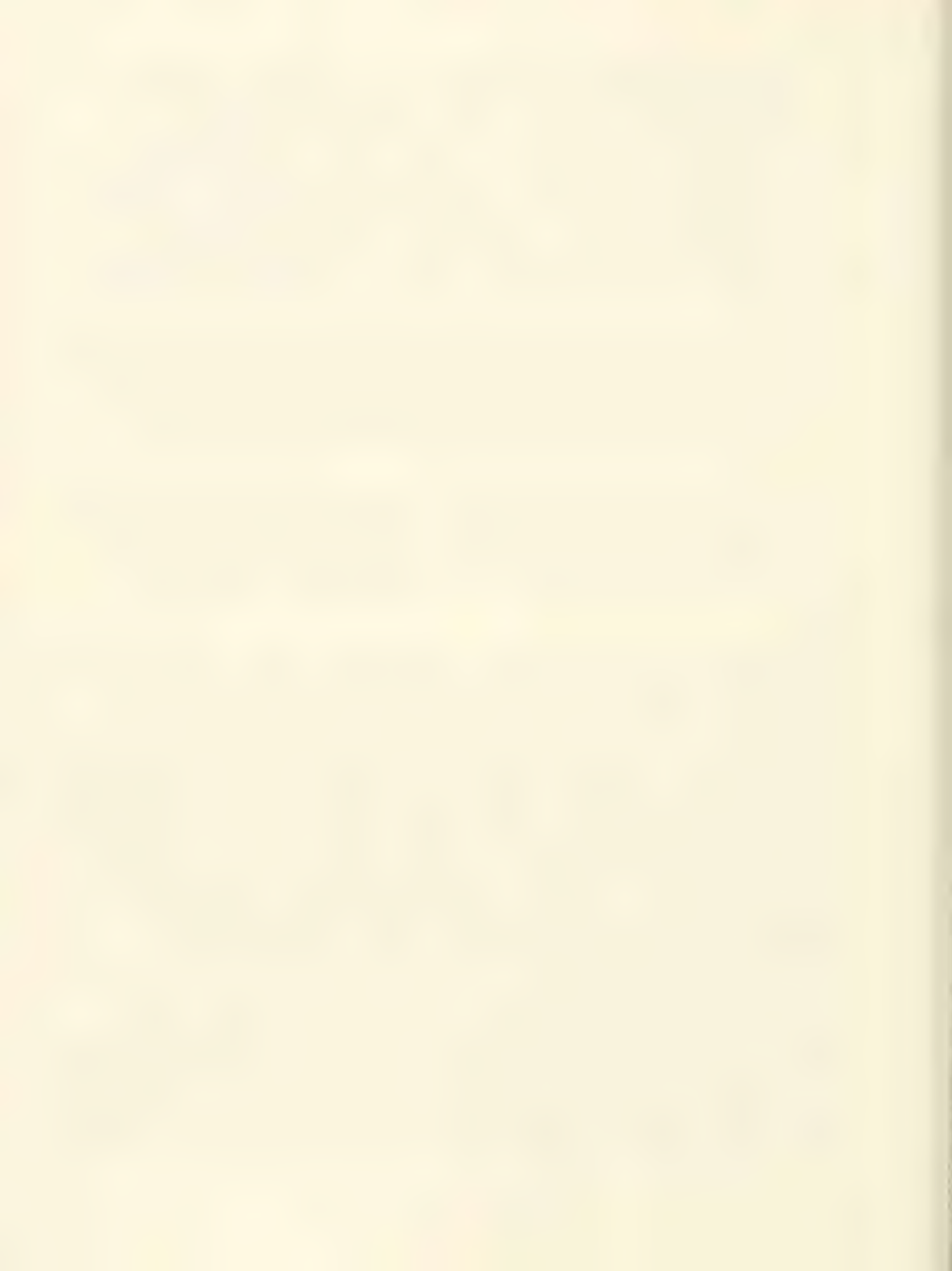
proposed height would be to construct floors within the void of the auditorium which would create practical difficulties and would not be desirable due to the significance the space. In addition, the Temple's only significant asset is the value of its real estate and development air rights, which, if the proposed height is not achieved, would be diminished substantially, possibly creating hardship from which the Temple could not recover. The Applicant also submits that the height variance necessary is the minimum required to achieve the allowable FAR for the site without filling in the void of Converse Hall.

- (c) When completed, Tremont Temple/ 90 Tremont Street will be in harmony with the general purpose and intent of the Code, will not be injurious to the neighborhood or otherwise detrimental to the public welfare, and will in fact be recognized as a prototype for the new mid-rise, infill-type development encouraged by the Midtown Cultural District Plan.
- (d) The Applicant intends to fully comply with the Development Impact Project Requirements in accordance with Sections 26A-3 and 26B-3 of the Code and has proposed herein its plans for the Roxbury housing creation project and its contributions to the City's jobs training programs.

FAR:

The Applicant's request for an exception to the Code for the proposed project's FAR 11 is in accordance with the provisions of Midtown Cultural District Zoning Plan Section 38-8 and Article 6A of the Code. The Applicant's rationale for the additional one ratio point requested over the As-of-Right FAR 10 regulation pertains to the uses qualifying for the increased FAR; Tremont Temple/90 Tremont Street will provide ground level retail uses, on-site day care facilities, space for community service organizations, substantially rehabilitated theaters and non-profit cultural uses. The total floor area occupied by these uses is actually 79,600 square feet, or 36% of the total 220,000 square foot project, far in excess of the maximum exemption of FAR 1 which is being requested. (Because of the unique structure of this joint development between the Partnership and the Society, the total non-commercial/publically-oriented portion of the project is unusually high.)

If the FAR 1 is assumed exempt in accordance with Midtown Cultural District regulations, the resultant FAR 10 of the project will conform to the As-of-Right FAR regulations for the site. This condition also relates to the Applicant's rationale for requesting a height variance; if not for the 60 foot high void within Tremont Temple pushing the allowed quantity of new construction up above the Temple, the FAR 11 (10) project would be in conformance with the simple definition of height outlined



in the Midtown Cultural District Plan and could fit well within the 155 foot height dimension. The Applicant must, however, request the previously described relief pursuant to Boston Zoning Code regulations.

Setback:

As described in the Sky Plane Setback Requirements paragraph in Section 5.1.3 following, the Applicant will require a variance pertaining to the upper levels setback of the Tremont Street facade on the Ninety Tremont Street component only.

5.1.2 Midtown Cultural District Use Regulations

The proposed Tremont Temple/90 Tremont Street project conforms to all use regulations of Article 38 as evidenced below:

Ground Level and Cultural Uses: First floor uses of the Tremont Temple/90 Tremont Street project will include Church (Chapel), auditorium (Lorimer Hall), book shop (or similar retail store), newsstand/lobby shop and restaurant uses.

Inclusion of Day Care Facilities: The Tremont Temple/90 Tremont Street project will create a 4,000 square foot day care center on site in accordance with the dimensional requirements for projects having a gross floor area of between 100,000 and 500,000 square feet. The center will be located in, and managed by licensed employees of Tremont Temple Baptist Church and will conform with regulations to be adopted by the Boston Redevelopment Authority.

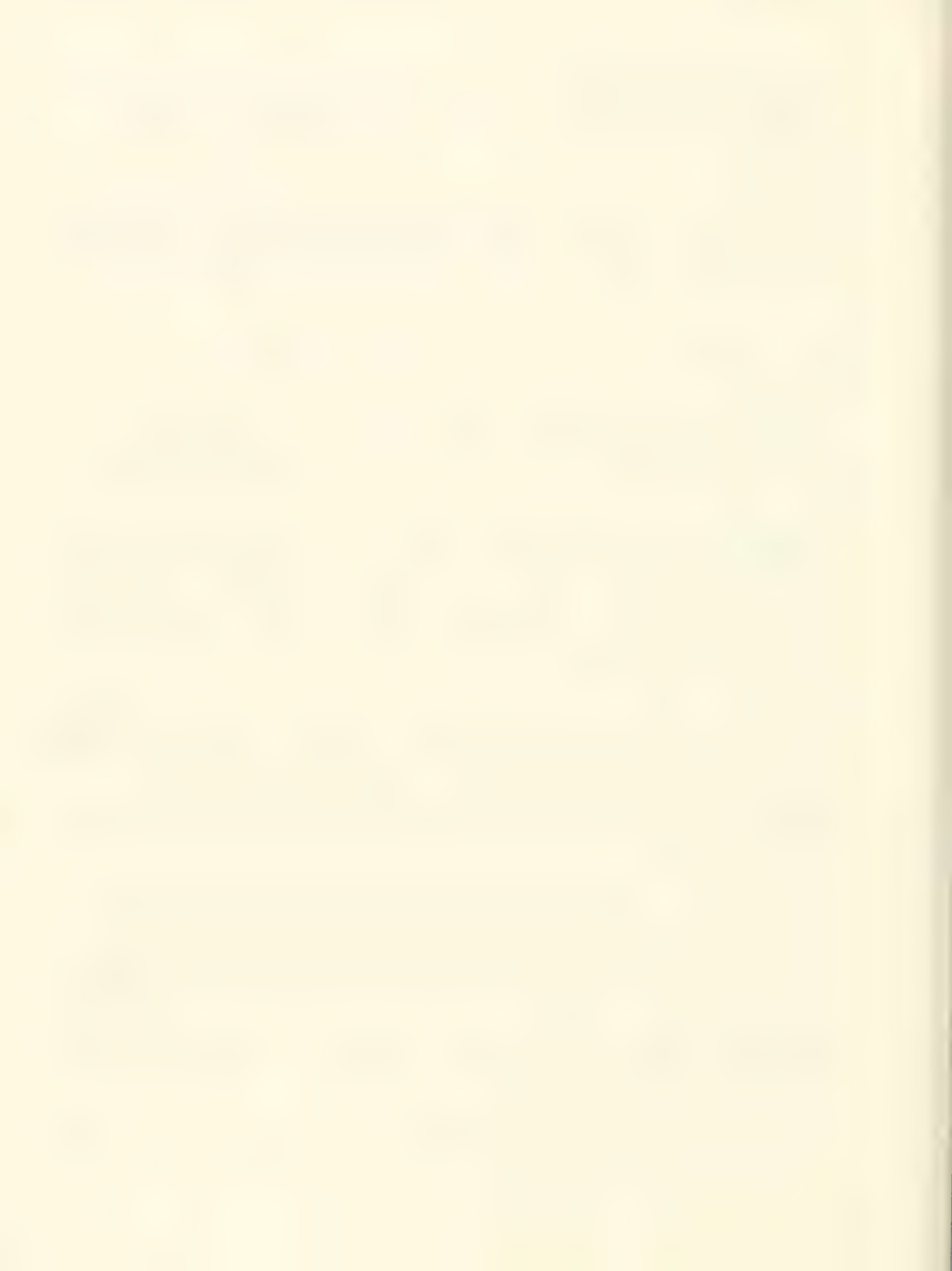
If future demand and resources exist for creation of a day care center in conjunction with the Applicant's Judson/West Cottage streets residential development, it will propose that a portion of the 4,000 square foot day care center requirement be transferred to the Roxbury site. Such a request will be submitted as warranted and in accordance with day care and housing creation programs, and Midtown Cultural District goals and requirements.

Allowed Uses: Institutional Uses, and Recreational and Community Uses (Tremont Temple's Converse and Lorimer Halls); Office Uses (Ninety Tremont Street, Church and community services); Restaurant and Entertainment Uses (Ninety Tremont Street's restaurant, Converse and Lorimer Halls); Retail and Service Uses; and Day Care Center will be provided as of right.

Accessory Uses: The below grade parking facility for 80 cars, to be used by tenants, visitors, customers and the Church, is considered an accessory use.

5.1.3 Specific Design Requirements

The Tremont Temple/90 Tremont Street project's compliance with



the Midtown Cultural District design requirements is described below:

Streetwall Continuity: The proposed project is completely coextensive with the existing building alignment of the block on which it fronts and effectively recreates the historically solid streetwall at the southern end of the block. The project also conforms to the recess depth restrictions for the streetwall above the floor structure for the second floor.

Streetwall Heights: The streetwall height of the proposed project is 84'-6" which is less than the 90'-0" height regulation. The project's streetwall terminates at that height in order to offset and defer to the abutting Tremont Temple's columned pediment, and also to allow its heavy cornice return to read above the setback.

Display Window Area Regulations: The proposed project conforms to the display window area streetwall regulations for transparency, continuity and usage.

Sky Plane Setback Requirements: The proposed project conforms to regulations established in Section 38-19, Table D relative to the building extension over Tremont Temple (setbacks of 25 feet, 27 feet, 29 feet), and the Ninety Tremont Street component above streetwall height (approximately 10'-8" setback above Tremont Streetwall height and exempt from Bosworth Streetwall setback based on the less than 9,000 square foot floor plate provision). As required, the portions of the project above 155 feet have been designed to create a visually distinctive termination of the building, which also represents an important component of Robert Stern's design for the project. Because of his massing scheme, which holds the verticality of the Ninety Tremont Street component consistent, while progressively recessing the upper levels of the Temple extension, the requirement for a 15 foot setback from the streetwall for the structure above 155 feet is not satisfied on the Ninety Tremont Street component only, which remains at the approximately 10'-8" setback dimension.

5.2 Local State, Federal Actions

The Tremont Temple/90 Tremont Street project will require the following approvals and permits:

<u>AGENCY</u>	<u>ACTION</u>	<u>SCHEDULE</u>
(a) <u>CITY</u>		
Boston Redevelopment Authority (BRA)	Development Impact Project (DIP) Approval	February, 1990
BRA	DIP Agreement	February, 1990
BRA	Boston Residents Construction Employment Plan Agreement	February, 1990
BRA	Design Approvals: Schematics, Design Development, Construction Documents	January, 1990 March, 1990 May, 1990
BRA	Certification of Compliance with Boston Zoning Code	February, 1990
Boston Landmarks Commission	Recommendation	January, 1990
Boston Civic Design Board	Recommendation (if active)	January, 1990
Zoning Board of Appeals (ZBA)	Zoning Code Relief	February, 1990
ZBA	Building Code Variances	February, 1990
Collector - Treasurer	Lot Consolidation Condominiumization	February, 1990
Parks & Recreation Dept.	Approval for Demolition within 100' of Public Park	April, 1990
Inspectional Services Department (ISD)	Demolition Permit	April, 1990
ISD	Building Permit	June, 1990
ISD	Notice of Construction Start	July, 1990
ISD	Occupancy Permit	January, 1992
Boston Fire Department (BFD)	Approval of Fire Safety	January, 1992
BFD	Certificate of Registration	January, 1992
Boston Public Imp. Comm. (PIC), Public Works Dept. (PWD), Transportation Dept. (BTD)	Curb Cut	May, 1990

PIC	Street Closings/Blockings (if required)	May, 1990
PIC	Foundation Easement	May, 1990
PIC	Discontinuance of Public Space (if required)	
PWD	Sign, Awning, Other Permit	May, 1990
Boston Air Pollution Control Comm. (BAPCC)	Compliance with Noise Restrictions	
Arch Access Board	Arch Access Compliance	
BTD	Transportation Access Plan and General Sign-Off	February, 1990
Public Safety Commission	License for Storage of Flammable Materials	April, 1990
Boston Water and Sewer Commission	Sewer Tie-In Approval	
Board of Health	Board Approval	
Private Utilities	Notice to Utilities	April, 1990

(b) STATE

Massachusetts Historical Commission	Determination	February, 1990
Mass. Department of Environmental Protection (DEP)	Pre-Asbestos Removal Notice	April, 1990
DEP	Pre-Demolition Notice	April, 1990
DEP	Pre-Construction Notice	June, 1990
DEP	Fossil Fuel Utilization Permit	
DEP & Mass. Div. of Water Pollution Control of DEP	Sewer Connection Permit	
Mass. Water Resources Authority	Approval of Grease Traps	

(c) FEDERAL

Environmental Protection Agency	Pre-Asbestos Removal Notice	April, 1990
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5.3 Community Review

The Applicant has met with the following parties to solicit their input and concerns (meetings held prior to July, 1988 not listed) regarding the proposed Tremont Temple/90 Tremont Street project:

<u>Group</u>	<u>Meeting Dates</u>
The Abbey Group/45 Province Street	October 88; April 89
Boston Athenaeum	August 88
Boston Landmarks Commission	July 88; April, Sept 89
Boston Parks and Recreation Dept.	July 88
Boston Preservation Alliance	July 88; Jan, March, Nov 89
Boston Society of Architects	Dec. 88; Jan. 89
Rep. Salvatore DiMasi	August 88
John DeMonchaux/Boston Civic Design Comm.	January 89
Dini's Restaurant	July 88
Downtown Crossing Association	June 89
Friends of Boston Common	July 88
Leggat McCall Companies/73 Tremont	August 88
Massachusetts Historical Commission	October 89
Midtown Cultural District Task Force	December 88; February 89
Office of Arts and Humanities	August 88
Omni Parker House Hotel	February, September 89

The Applicant commenced the next phase of community review with a presentation on the Tremont Temple/90 Tremont Street project by the development team at Tremont Temple on December 1. The event was held in Converse Hall and the hand-outs presented in Figures 5.3-1; 5.3-2 and 5.3-3 were distributed. The event was an open meeting, however, invitees included the parties listed above as well as:

AFL-CIO, Massachusetts
American Congregational Association
American Guild of Organists
Arts/Boston
Boston Architectural Center
Boston Civic Design Commission
Boston Early Music Festival
Boston Lyric Opera Company
Boston Natural Area Fund
Boston Redevelopment Authority Board, Director, Staff
Boston Theater District Association
Boston Urban Gardeners
Building and Construction Trades Council of the
Metropolitan District
Building Owners and Managers Association
The Cathedral Church of St. Paul
Dudley Street Neighborhood Initiative
Festival of Light and Sound
Mayor Raymond Flynn
Freedom Trail Foundation, Inc.

NINETY TREMONT STREET

Evangelical Baptist Benevolent and Missionary Society
Tremont Temple Baptist Church
76-88 Tremont Street
Boston, Massachusetts

90 Tremont Street Associates, L.P.
St. James Properties, Inc.
67 Batterymarch Street
Boston, Massachusetts

Present

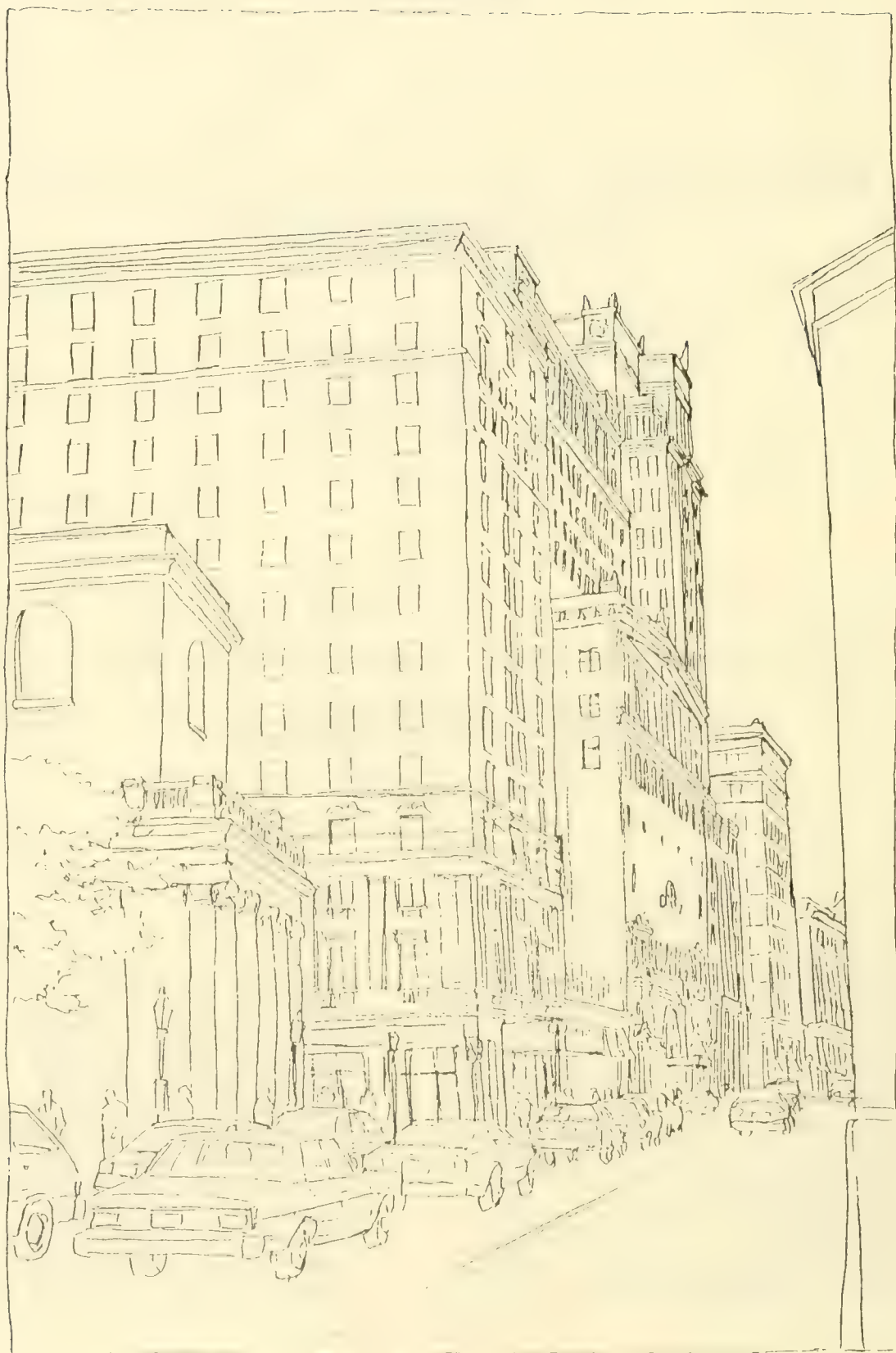
76-98 Tremont Street, Boston, Massachusetts

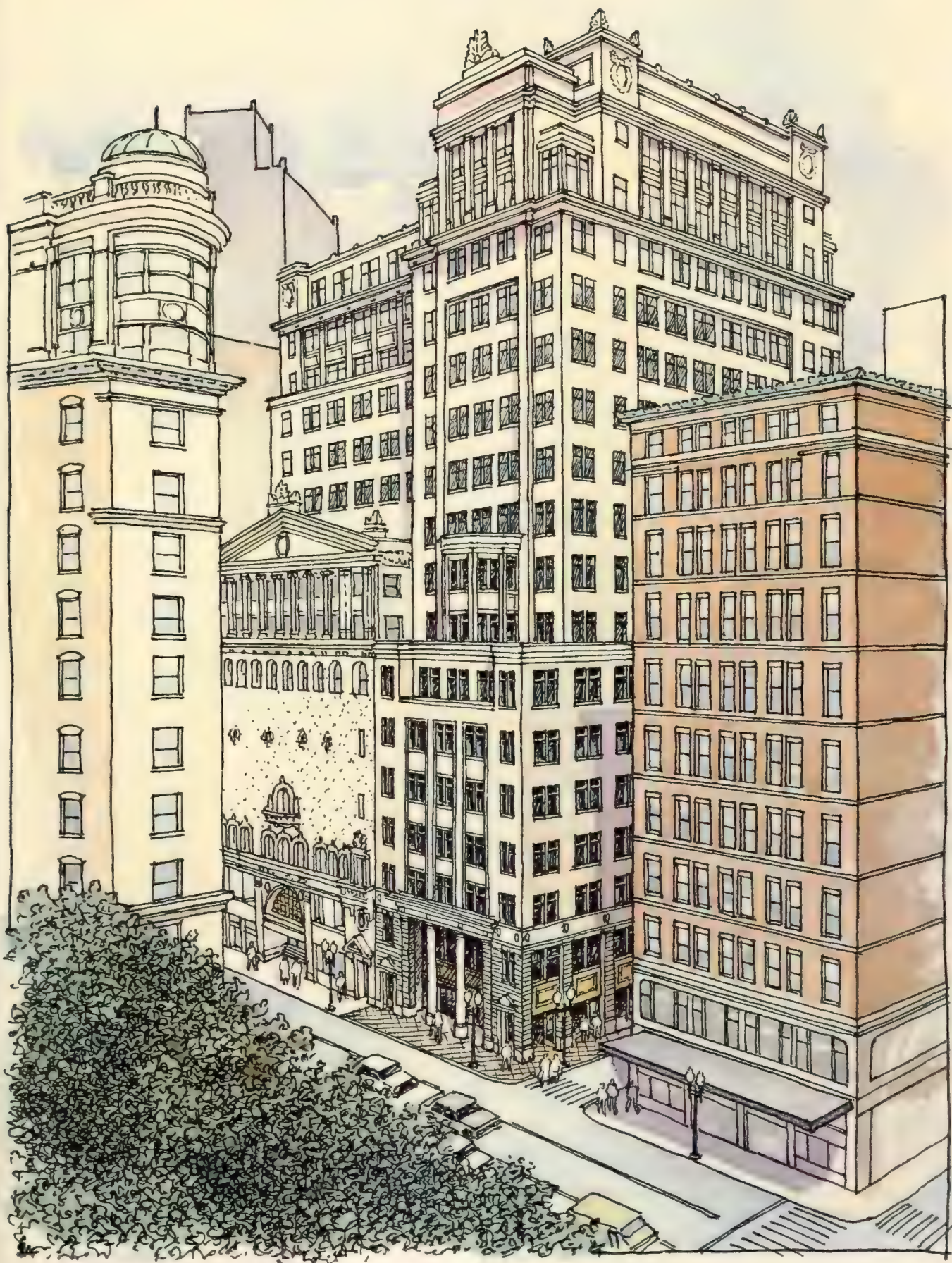
...a unique and united project for the
Midtown Cultural District

December 1, 1989

Draft Project Impact Report Summary

Tremont Temple:	70,600 GSF	Project combines
Ninety Tremont Street:	140,400 GSF	restoration of historic
Retail:	1,500 GSF	Tremont Temple facade and
Restaurant:	3,500 GSF	interior renovations with
Day Care:	4,000 GSF	new construction of
-----	-----	contextual mid-rise Ninety
Total Project Area:	220,000 GSF	Tremont Street building.
Site Area:	19,920 SF	Architects for Tremont
Floor Area Ratio:	11 (10)	Temple--Notter, Finegold +
Total Number of Floors:	16	Alexander; for Ninety
Total Height:	190'-6"	Tremont Street--Robert
Parking Spaces:	80	A.M. Stern Architects and
Off-Street Loading Bays:	1	Jung/Brannen Associates.





Illustrator: F.M. Costantino

TREMONT TEMPLE/90 TREMONT STREET
PUBLIC BENEFITS

- Tremont Temple Baptist Church
\$3.6 million to be received by Tremont Temple for renovations to Church proper and ancillary spaces, and to upgrade life safety and circulation systems.
- Historic Preservation
Tremont Temple's terra cotta and rusticated limestone facade will be cleaned, storefronts will be reconstructed to original configuration, and interior details and finishes will be restored.
- Cultural Contributions
Performing arts facilities and equipment in Converse Hall will be upgraded including sound, theatrical lighting, circulation and HVAC systems. Other proposed improvements include carpeting, seating, lobby, exterior illumination and signage, parking and off-street loading.
- Day Care
A 4,000 square foot child care center will be provided.
- Housing Creation
Affordable/moderate residential project is proposed for \$200,000 housing linkage funds for Roxbury site in partnership with Twelfth Baptist Church and Second African Meeting House Corporation.
- Economic Benefits
Jobs linkage funds of \$50,000 to be contributed to English language and jobs training programs. Approximately 152 construction-related and 532 permanent jobs will be generated by the project. Taxes on the completed project will be approximately \$600,000 annually versus the current \$58,000 paid on the property.
- Open Space
A contribution of approximately \$40,000 in in-kind services for restoration of the Old Granary Burying Ground has been proposed. Bosworth Street pedestrian improvements have also been proposed which include paving, lighting, signage, seating, plantings and an outdoor cafe for Ninety Tremont Street's restaurant.
- Urban Design
The current void in the historically strong Tremont Streetwall will be replaced with the contextual yet striking new mid-rise Ninety Tremont Street building. Its ground and second floors and its light-toned masonry facade will echo and complement Tremont Temple's two-level entry as well as its storefronts and unique facade.



Tremont Temple/90 Tremont Street combines the restoration and modernization of the Tremont Temple Baptist Church with the creation of a new office building partially built atop the Temple but mostly located on a narrow corner parcel that lies along its southern flank. Ninety Tremont Street respects the rich architectural forms and associations of a Boston landmark, the Tremont Temple (Clarence Blackall and George Newton, 1894) and at the same time establishes its own identity as an important mixed-use building in the midtown area.

Taking its cue from the pre World War Two American skyscraper tradition in which utilitarian space is wrapped in aesthetically powerful, historically derived form, Ninety Tremont Street, like the Temple, uses a Classical vocabulary. While the Temple is polychromed with surface decorative patterning, Ninety Tremont Street is austere, so that it can at once serve as a foil for its more flamboyant neighbor and establish its own presence as a first class commercial office building. While Ninety Tremont Street's coursed limestone and precast facades contrast with the Temple's multicolored terra cotta, the new building's first two stories maintain the rustication of the neighboring facade.

Ninety Tremont Street is designed as two related masses; its principal mass is a slender towerlike campanile to the Temple, a classical column with a clearly defined base, shaft and top. At the campanile's eighth story, a setback helps insure that the distinctive profile of the Temple's pedimented facade will retain its distinct identity in the streetscape. Ninety Tremont Street's secondary mass is a horizontal, fly-loft-like penthouse atop the theatrelike Temple. This portion of the composition, set twenty-five feet back from the facade, is aligned with the height of the adjacent Parker House Hotel extension.

Inspired by the early nineteenth century churches of the Glasgow architect Alexander (Greek) Thompson and McKim, Mead & White's Judson Memorial in New York (1892), the new Ninety Tremont Street/Tremont Temple reverberates with the continuity of traditional form and its capacity to enhance the meaning of new relationships in the present.

Robert A.M. Stern Architects

Friends of the Granary Burying Ground
Greater Boston Chamber of Commerce
Greenspace Alliance
Handel & Haydn Society
Historic Boston, Inc.
Historic Massachusetts, Inc.
Historic Neighborhoods Foundation
King's Chapel
Local Press
Marliave Restaurant
Mason Place Residents
Midtown Project Developers
Nathan Miller Properties
Nevada Bob's
Old City Hall Tenants, Roger Webb
One Beacon Street Tenants
Opera Company of Boston
Paddock Building Tenants, Dr. Emille Dupont
Park Street Church
Paulist Center
Councillor Robert Travaglini
151 Tremont Street Residents
Tremont Temple Baptist Church
Twelfth Baptist Church of Roxbury/Second African Meeting House
Union Club

The Applicant is currently scheduling individual community group meetings as warranted prior to the scheduling of the Boston Redevelopment Authority Board Public Hearing to resolve outstanding issues with the appropriate parties.

If, during the course of the upcoming community review period, a consensus is built in support of increasing proceeds to the Temple to fund increased work on the Temple, the Applicant will make the following special request:

The Applicant will request that during review by the Boston Redevelopment Authority of this document, specifically the zoning relief requests, the unique history and conditions of this joint development be acknowledged and incorporated into its evaluation and formal response. Tremont Temple receives sales proceeds for every square foot of development air rights required by the project, thus due to the decreased size of the Proposed Project (FAR 11) from the range originally proposed in the Project Notification Form (FAR 12.6 - 14.6) the sales proceeds to the Temple are significantly reduced. Consequently, the capital requirements to accomplish the full restoration program of Tremont Temple Baptist Church are not fully met.

Reasons for the reduction in both project size and resultant proceeds to the Temple include:

- The physical constraints of the site such as the void of Converse Hall and the small site area of 90 Tremont Street,

and setback requirements--both Midtown Cultural District regulations and building code;

- The timing of this proposal simultaneously with the adoption of the Midtown Cultural District Zoning Plan and its attendant 155 foot height and FAR 10 regulations, thus rendering Tremont Temple/90 Tremont Street potentially politically controversial, even though the proposal was originally conceived for the public benefit and not solely for financial gain;
- The current economic reality; because of delays in the project schedule, both internal and external, the Applicant can not afford to continue in a schematic phase/project alternatives analysis mode any further. The Society has only one substantial source of capital available at this time, that being the proceeds from the sale of its air rights and basements to the Partnership. The proceeds will fund the physical repair of the Temple which has now become essential to preserving the building for future use and can not be deferred any longer.

From the Partnership's point of view, the proposed project of FAR 11 is commercially viable, albeit at the margin relative to today's soft market economics, as shown in Section 2.3.2. The Partnership is willing, however, to make the case at this time for the highest and best use for this quality downtown location, on its own behalf and on behalf of its partner, Tremont Temple. As knowledgeable and sensitive urban planners and developers, principals of St. James Properties posit that the opportunity cost to the public at large from forfeiting the ability to create a unique mixed-use development at this site would be substantial. It is their contention that a higher order of urban development should be encouraged in this world class City. Although they respect the foundations for regulating urban growth, a request is made herein that this project be judged on its individual merit.

Tremont Temple Baptist Church desires to remain in its current location; it is an urban Church with a clear mandate and history of outreach to people from all economic strata and ethnicities. Through the proposed Tremont Temple/90 Tremont Street project, the Church will be able to renovate its facade and interiors to a stabilized level. However, the grand theater/Church of Blackall and Newton deserves special restoration treatment such as the type formerly completed on income producing historic properties under the now-revised Preservation Tax Credit program administered by the U. S. Department of the Interior. With the effective repeal of the Tax Act, the responsibility of restoring and preserving our historic resources is now in the hands of the private sector. With any increased density of Tremont Temple/90 Tremont Street, the Temple

would receive increased capital with which to increase the amount of renovation work possible on its building.

The project presented in this Draft Project Impact Report proposes a height of 190'-6" which requires a variance, and FAR 11 which requires an exception. The Applicant requests that additional information related to the proposed zoning relief be reviewed based on the exceptional conditions, and potential benefits of this joint development. During their evaluation of this proposal, the Applicant requests that the BRA and the public at large compare and consider the following alternative project scenarios while analyzing the magnitude of the requested zoning relief:

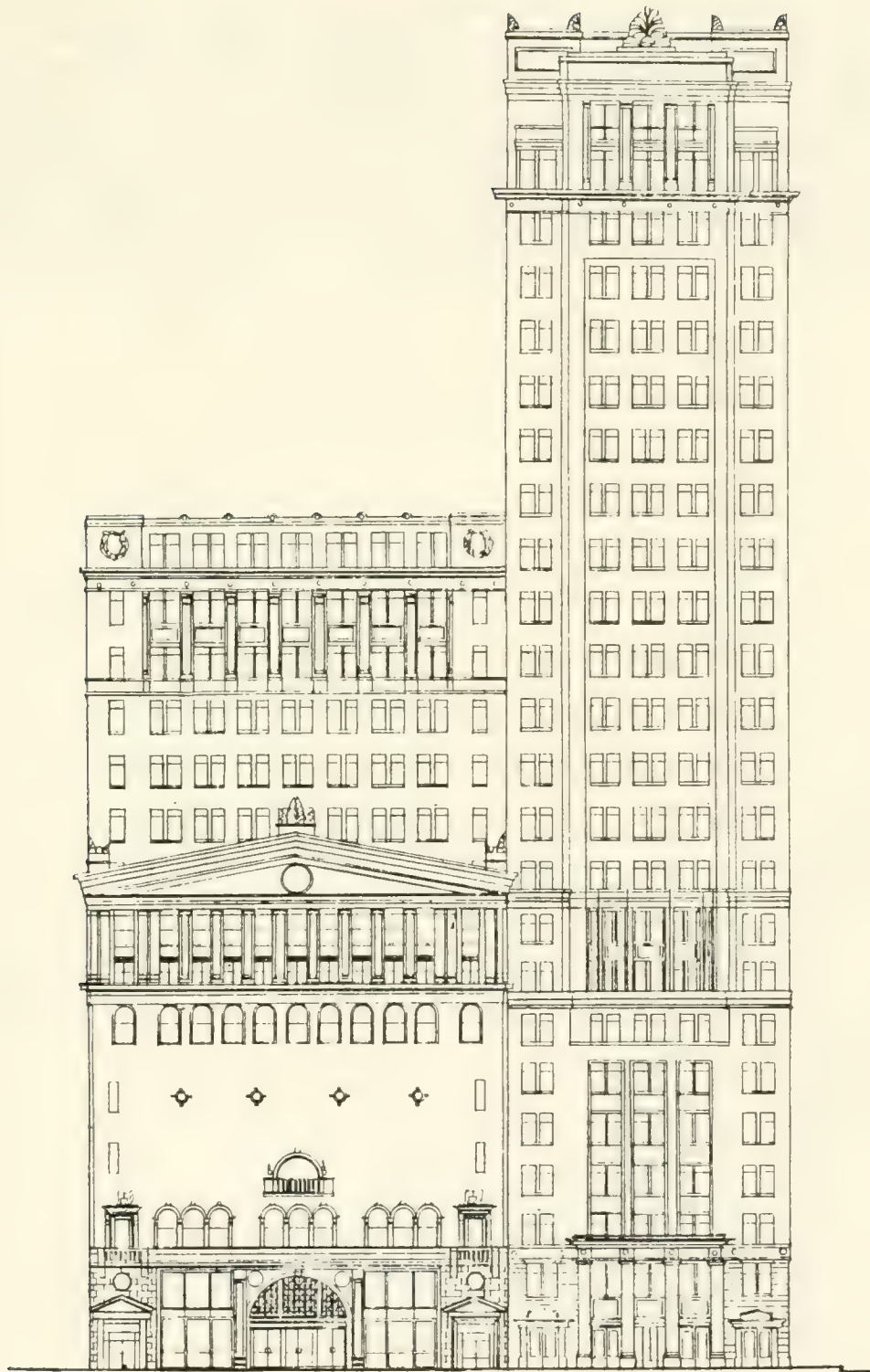
With each additional Ninety Tremont Street floor (as per Robert A. M. Stern's "slender tower" concept, Section 9.5), Tremont Temple would receive approximately \$190,000, the project FAR would increase by .3 and project height (on the 90 Tremont Street site only) would increase by 11'-9". As an example, for the Temple to receive the \$5 million which would have been generated under the originally proposed project outlined in the September, 1988 Project Notification Form, the Ninety Tremont Street component of the project would have to increase by seven floors, or FAR 2, to a project height of 273 feet and FAR 13, as graphically presented in Figure 5.3-4 following.

To further illustrate this concept, Table 5-2 below presents the approximate total proceeds to Tremont Temple which would be generated through the approval of a revised project scenario, assuming the base case is the 190'-6"/FAR 11 project proposed herein. (Project scenarios which generate less than the FAR 11, or 220,000 gross square feet proposed in this Draft Project Impact Report are not listed below. It is important to reiterate the reason for this: a joint project smaller than the Proposed Project would not be possible and would result in the reversion to a single-site, non-Temple proceeds generating scheme.) The scenarios shown below incorporate the incremental Ninety Tremont Street floor as previously described:

TABLE 5-1

TREMONT TEMPLE PROCEEDS

<u>Height</u>	<u>FAR</u>	<u>\$ to Temple</u>
202'-3"	11.3	3,801,000
214'-0"	11.6	3,991,000
225'-9"	11.9	4,181,000
237'-6"	12.2	4,371,000
249'-3"	12.5	4,561,000
261'-0"	12.8	4,751,000
272'-9"	13.1	4,941,000



**TREMONT TEMPLE/90 TREMONT STREET
SLENDER TOWER SCHEME**

Figure 5.3-4

If the BRA determined that additional financial, design or environmental impact information on any of the above scenarios would be useful to incorporate into the Final Project Impact Report for Tremont Temple/90 Tremont Street, the Applicant would be able to submit such information in a timely fashion based on the quantity of analyses generated to date on numerous alternative project schemes. The Applicant would also continue to work together with the BRA and the community to accomplish the myriad of objectives associated with this unique project.

TRANSPORTATION COMPONENT

6.1 Introduction

6.1.1 Project Description

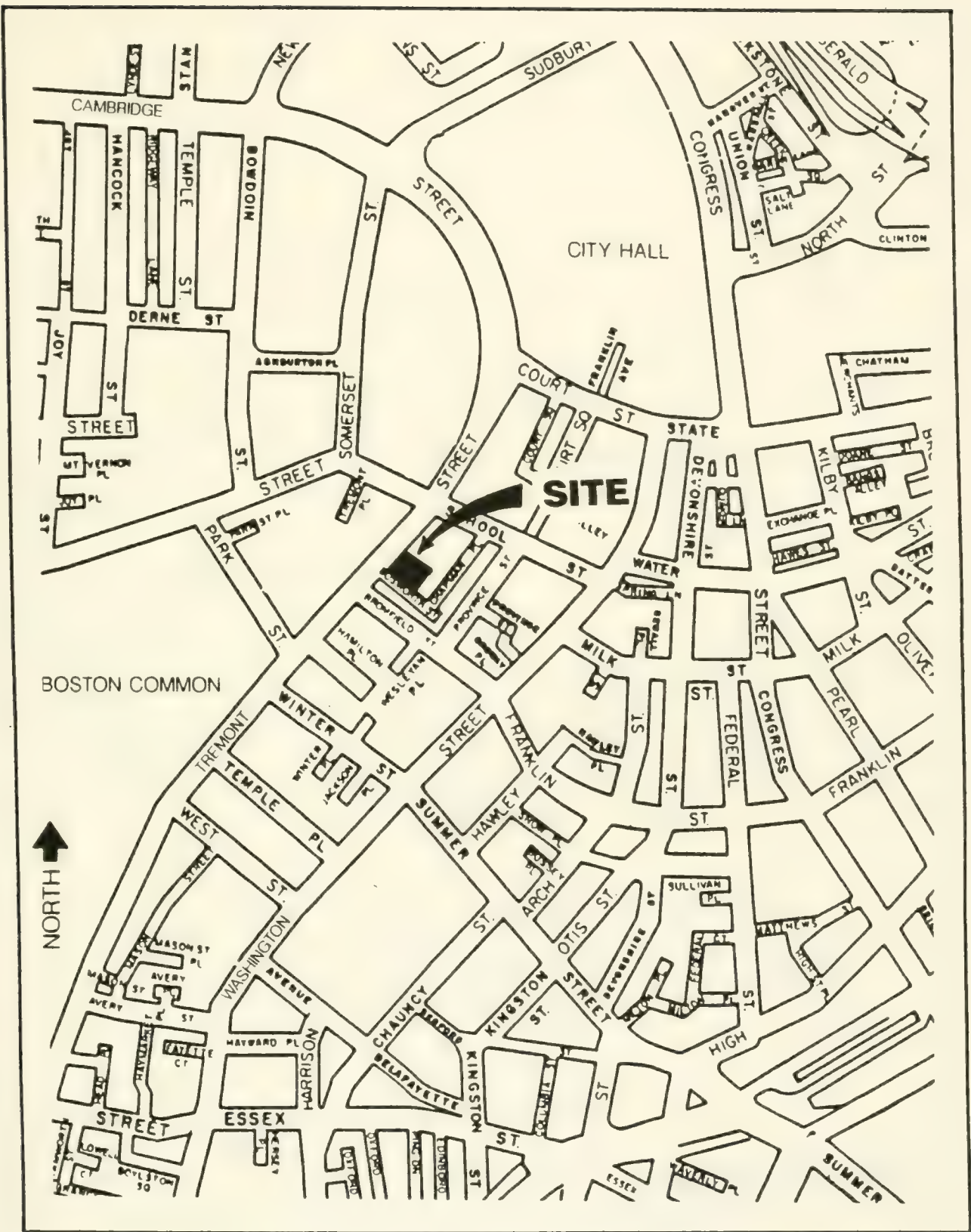
The transportation component of this report addresses the traffic impacts associated with the proposed Tremont Temple/90 Tremont Street project. The project is a mixed-use office/Church/retail/restaurant/day care facility, but the predominant traffic generating use will be the office component of the project. Figure 6.1-1 is a General Location Map showing the site's location in the downtown area.

The project has frontage on both Tremont and Bosworth Streets. Vehicular access and loading will be provided off of Bosworth Street which is accessed only by Tremont Street which in this area is one-way southbound. Bosworth Street also has an outlet onto School Street via Chapman Place, which operates as a one-way roadway between Bosworth Street toward School Street. This provides a second means of egress for vehicular traffic. Pedestrian access to the site will be provided from Tremont and Bosworth Streets and indirectly from Province Street via the Province House Steps at the foot of Bosworth Street. Figure 6.1-2 is a Schematic Site Plan showing a close-up of the site in terms of its street elevation and access conditions.

The building plan calls for the construction of 140,400 square feet of office space; 3,500 square feet of restaurant space (down from the 6,500 existing at the site now); 1,500 square feet of retail space (down from 6,500 presently); 4,000 square feet designated for day care; and 70,600 square feet of "Church" space-- including hall, classroom, and office uses--(down from 77,500 square feet presently.)

6.1.2 Study Methodology

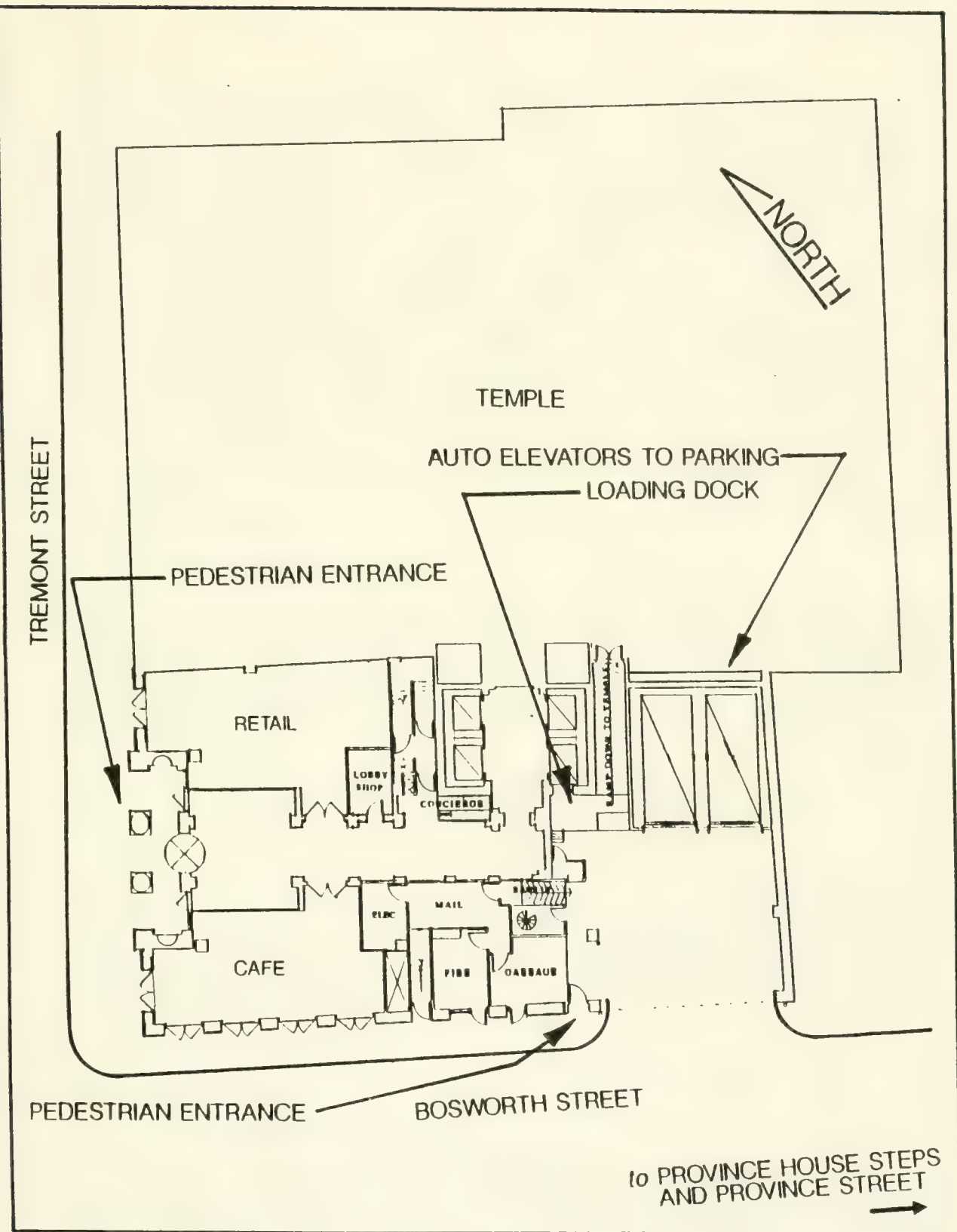
A standard transportation impact analysis is contained in this report. The analysis includes the determination of existing traffic volumes, the determination of background traffic growth due to specific projects and general area development, the determination of site-generated traffic and directional distribution, and the development of a future year traffic projection consisting of existing, background, and site-related traffic. Intersection analyses for all the intersections includes the morning and evening peak hours for the Existing, future No Build, and future Build conditions, assuming that the project is in place and fully occupied. In addition, an analysis of transit, pedestrian, and parking impacts has also been included.



GENERAL LOCATION MAP



Figure 6.1-1



SCHEMATIC SITE PLAN

Peak hour traffic volumes for the Existing condition collected by counting traffic from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. The four, consecutive 15-minute periods which had the highest total approach volumes were extracted therefrom and were designated the morning and evening peak hours. The report includes descriptions of the methodology used in determining trip generation, directional distribution, and the extent of background traffic. Because the site is located within an area of intense activity and development for which recent traffic studies have been prepared, existing traffic data has been obtained from those studies. These include the study for 73 Tremont Street, by this consultant, and the Boston Crossing study prepared by Bruce Campbell & Associates. In particular, the Draft Boston Crossing Project Impact Report, submitted in May, 1989, provides current up-to-date traffic and transportation information which has been incorporated in this report. Throughout the report, sources of all data and assumptions are provided.

6.1.3 Study Area

The study area used to evaluate this project was determined based on discussions with the City of Boston Transportation Department (BTD) staff. Based on these discussions and the consultant's evaluation of the likely impact area, the following intersections have been identified for detailed analysis:

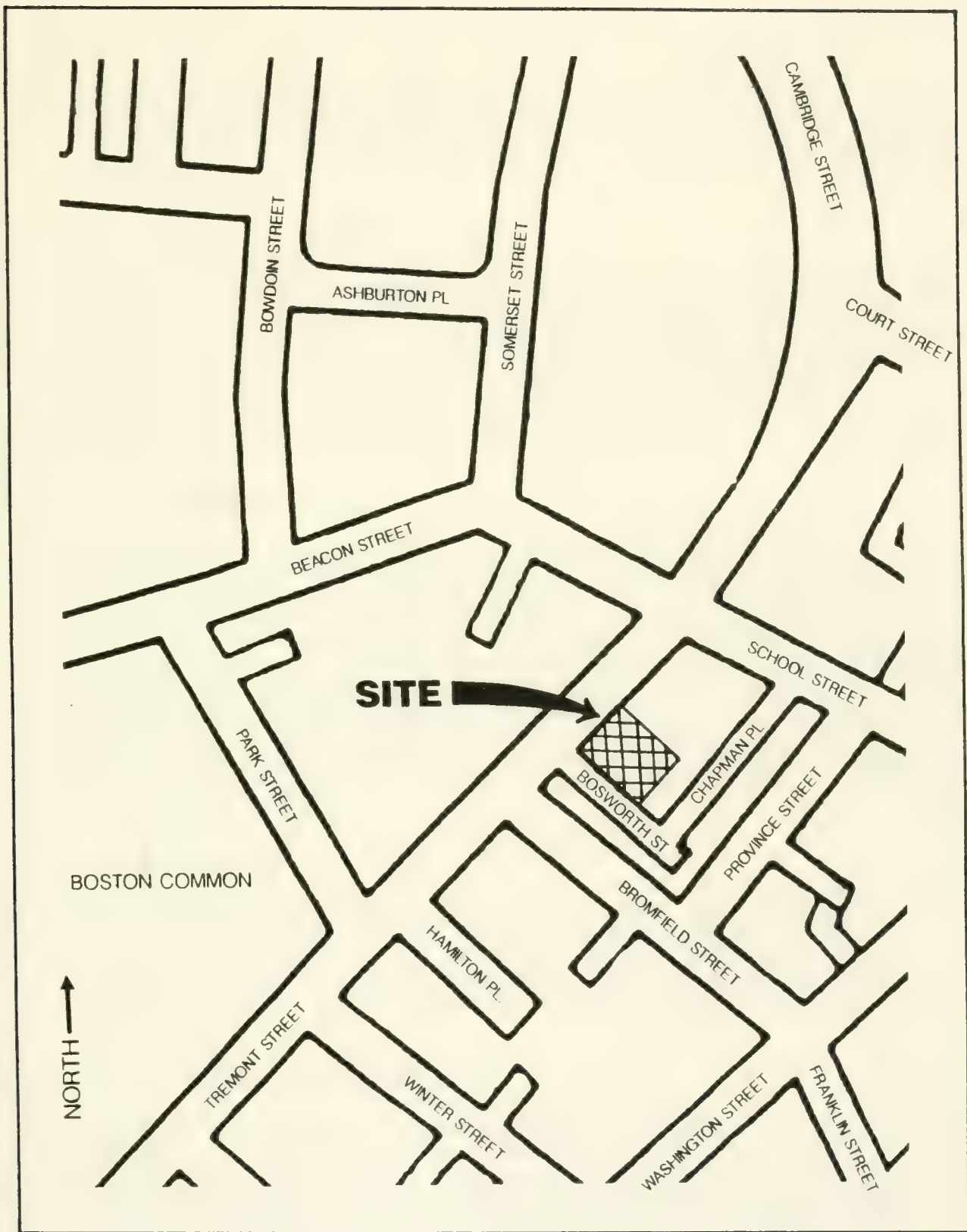
- Tremont Street at Beacon Street;
- Tremont Street at Bosworth Street;
- Tremont Street at Bromfield Street;
- Tremont Street at Park Street.

By virtue of the circulation system, all incoming traffic must arrive via Tremont Street from the north and it is expected that nearly all traffic will depart the area via Tremont Street heading south. Figure 6.1-3 provides a Project Area Map showing the extent of the study area and the intersections analyzed.

6.2 Existing Conditions

6.2.1 Area Description

The site is located in an area that is particularly well accessed by public transportation. Its vehicular access is fair to good, but because the project is located so close to the center of the business district, the site is not considered to be an "easy-in-easy-out" location and this is a factor which will influence the trip generation of the site. The site, however, is within a very short walk of the Park Street MBTA station which provides direct access to the Green and Red Lines. The site is also very close to the



PROJECT AREA MAP



Figure 6.1-3

State Street and Government Center MBTA and Downtown Crossing stations offering direct access to both the Blue and the Orange Lines. In addition, the site is within reasonable walking distance of the bus terminal at Haymarket Square.

6.2.2 Traffic Volumes

In accordance with the discussions made with the BTD staff, traffic count data were obtained from the impact reports for Boston Crossing and 73 Tremont Street reports previously submitted to the City. Morning and evening counts for the intersections identified for analysis were available from their data. Figures 6.2-1 and 6.2-2 show the Existing Traffic Volumes, AM and PM Peak Hour, respectively, for the four intersections studied for this analysis.

6.2.3 Roadways

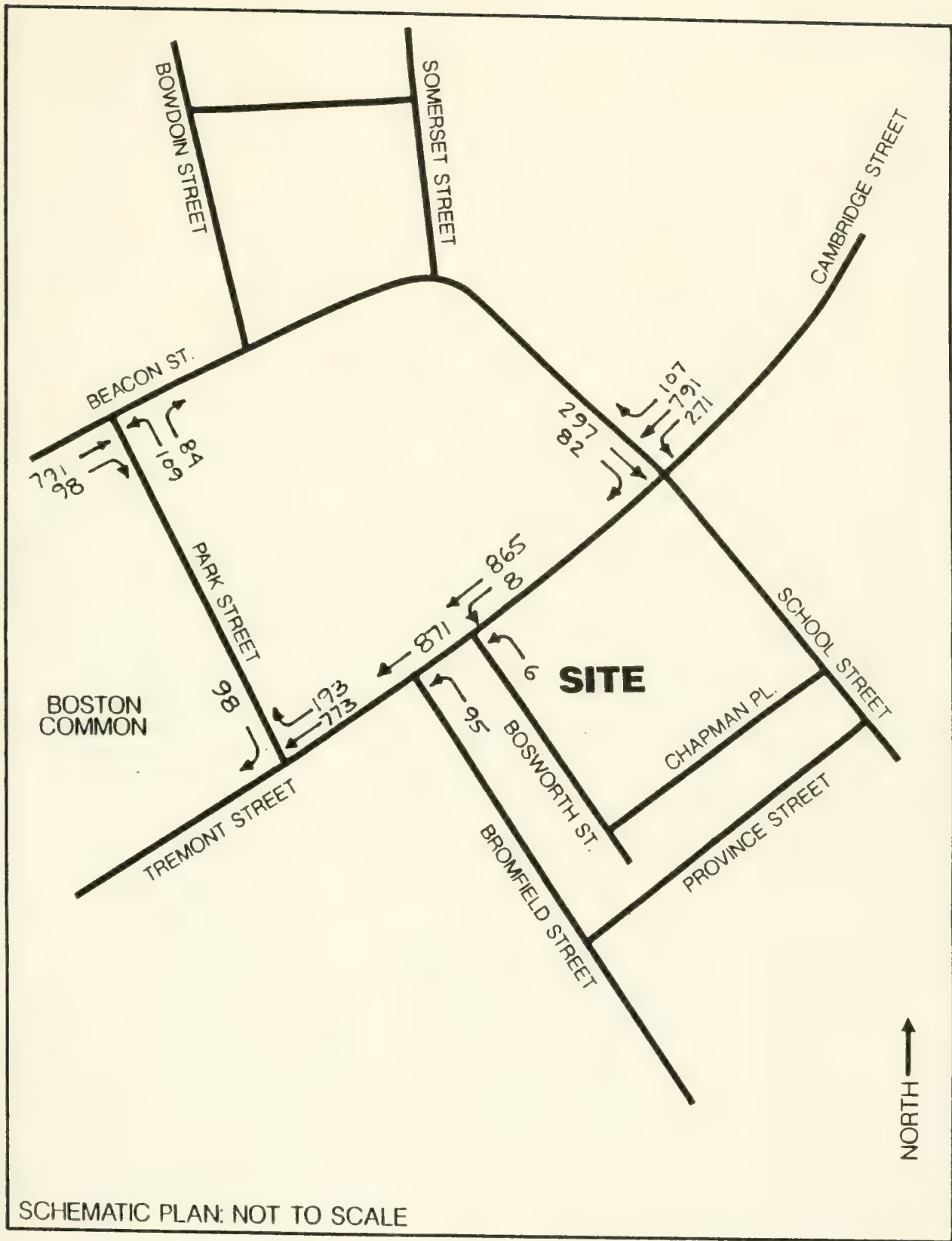
The roadways in the area include Tremont and Beacon Street--two major roadways, and several connector roadways such as Park Street, School Street, and Bromfield Street. It is noteworthy that in this area, nearly the entire roadway cross-section of most streets is devoted to moving traffic. In particular, about two years ago, Tremont Street was designated as a corridor to receive intense traffic enforcement during commuter hours, so that the roadway would remain open. Prior to that time, curb lanes on both sides of the street had been used for drop-offs and taxi stands, and prior to that, metered parking was available at the curb along Tremont Street.

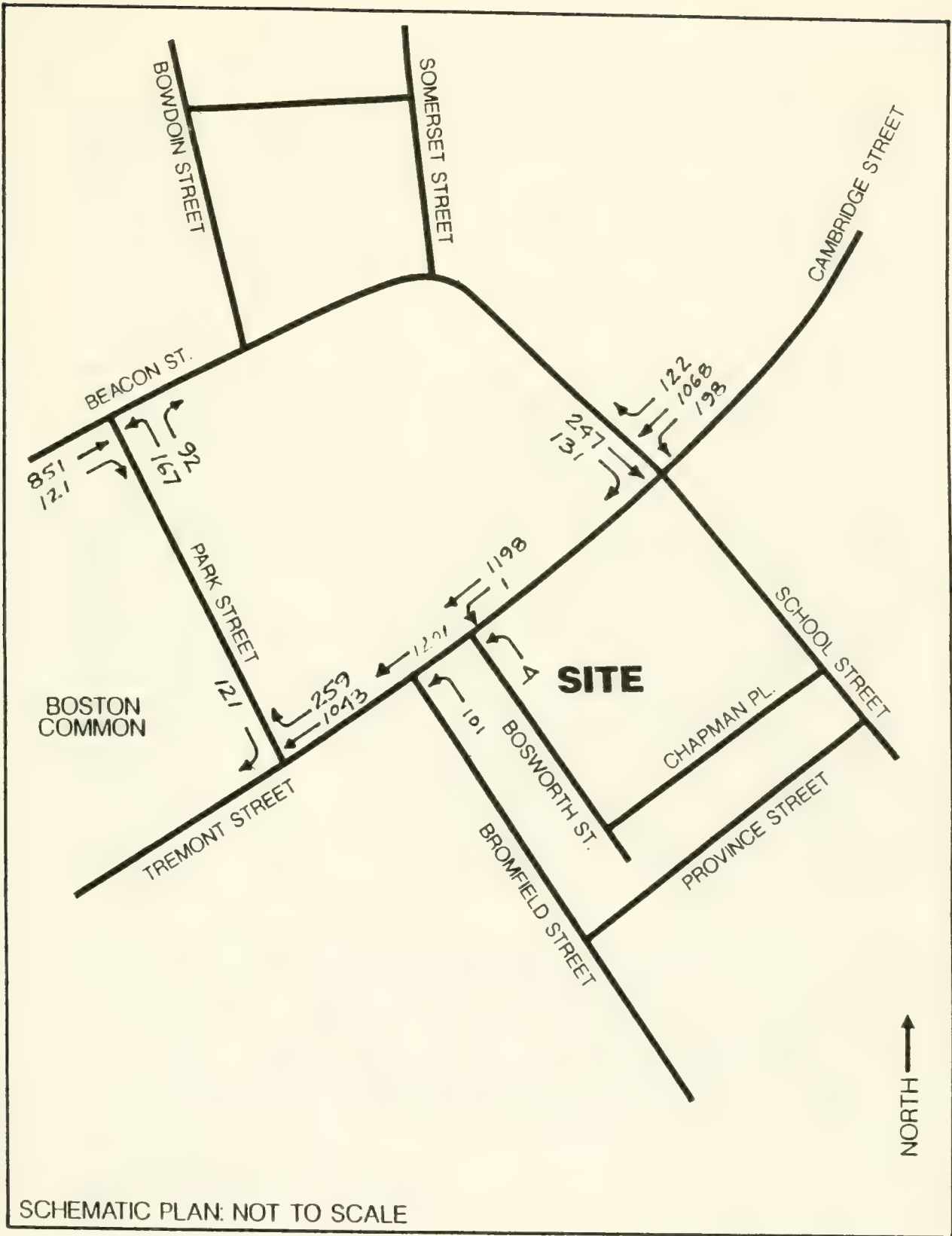
6.2.4 Pedestrian Access

The site has frontage on two streets, but is accessible virtually from all sides of the block on which it is located. Because of the Province House Steps at the intersection of Bosworth Street and Province Street, pedestrians can walk to the site from all four cardinal directions.

6.2.5 Public Transportation

The site is almost adjacent to the MBTA's most important and highest volume station in the system-- Park Street. This station provides direct access to the Green and Red Lines and--via single-stop transfers--to the Orange and Blue Lines. Access to virtually the entire MBTA commuter rail network is available from the Park Street Station as well, since these lines connect with both North and South Stations. In addition, the site is also very close to the Government Center Station, which enables access to the Blue Line serving Logan Airport and the North Shore. Downtown Crossing Station is also close, which serves both the Red and





EXISTING TRAFFIC VOLUMES
PM PEAK HOUR

Figure 6.2-2

Orange Lines, providing a direct connection to the latter. As shown in Figure 6.2-3, the site is virtually in the center of the MBTA network with all four lines accessible via two of the four local stations.

Figure 6.2-3, MBTA Locations/Walking Distances, also shows the walking distances from the site to the various MBTA stations in the area.

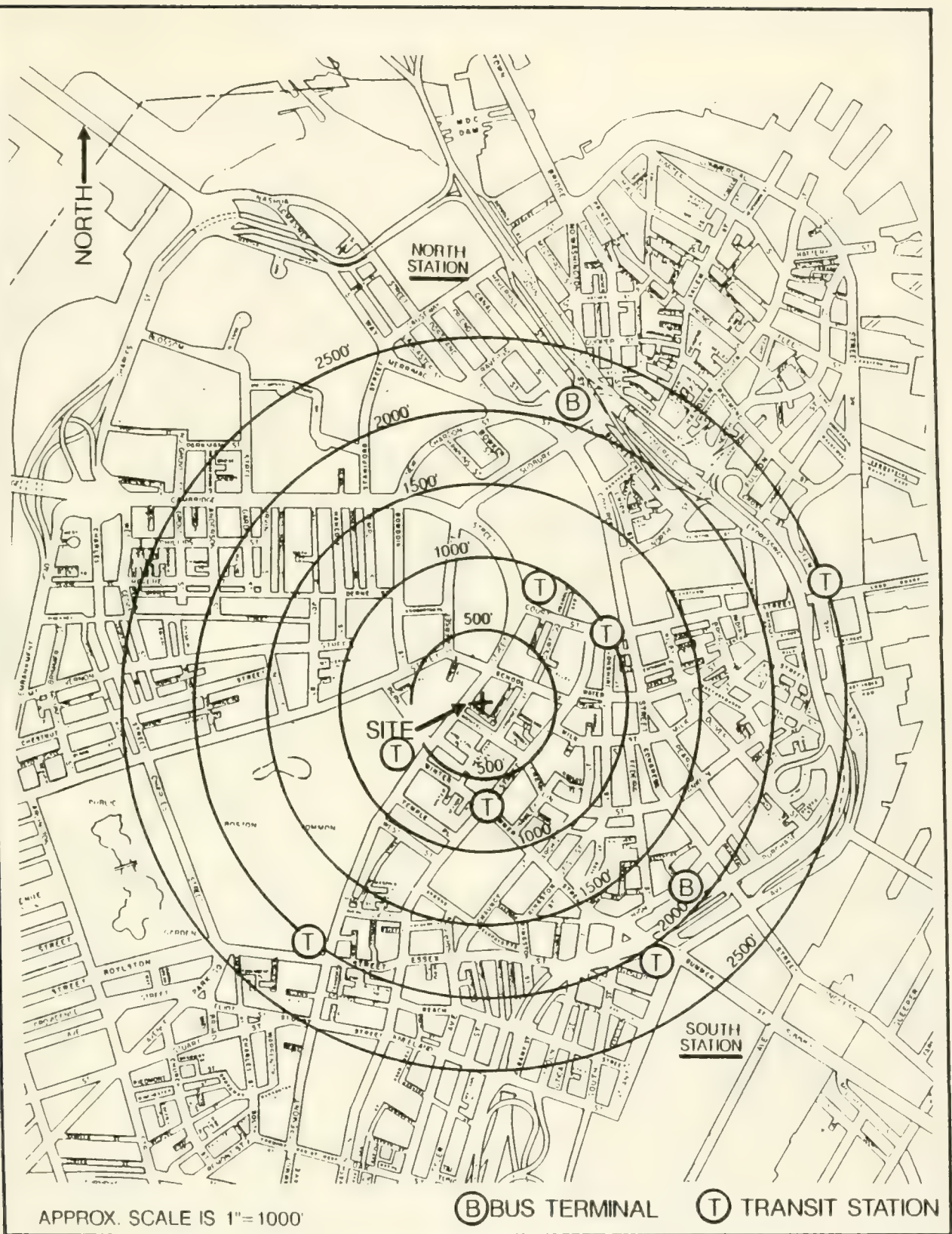
6.2.6 Parking

The site is reasonably well-served by public parking facilities which would be available to employees and visitors of the tenants. Currently, the closest parking to the site is located on Province Street, in an older mechanical garage and a small surface lot. This site is expected to be developed for other purposes in the near future although the plans include maintaining the existing public parking spaces with additional spaces for private use. Aside from this, the most convenient parking supply for the site is located to the north in the Center Plaza and One Beacon Street garages. These garages have spaces available for all-day parking, while still having adequate capacity for short-term parkers. By adjusting rates to match demand, these garages have been able to satisfy employee demand (it is still possible to obtain monthly parking spaces), while at the same time satisfying short-term middle-of-the-day demand by visitors. These garages rarely, if ever, display the FULL sign during the day. In addition, there are several small, scattered surface lots throughout the area which could serve the site. Some of the buildings in the area also have their own small parking supplies, but these are not available to off-site employees or visitors.

There are few metered curb spaces available to the project. Toward Washington Street, curbs are used for loading zones and taxi cabs, or are otherwise restricted. A deterrent to the use of curb parking for this site is the generally poor search pattern that exists. Even if available, the blocks in this area are not easily circled resulting in longer than acceptable searches. Figure 6.2-4, Nearby Parking Locations, presents the parking locations in the vicinity of the site.

6.3 Background Traffic Growth

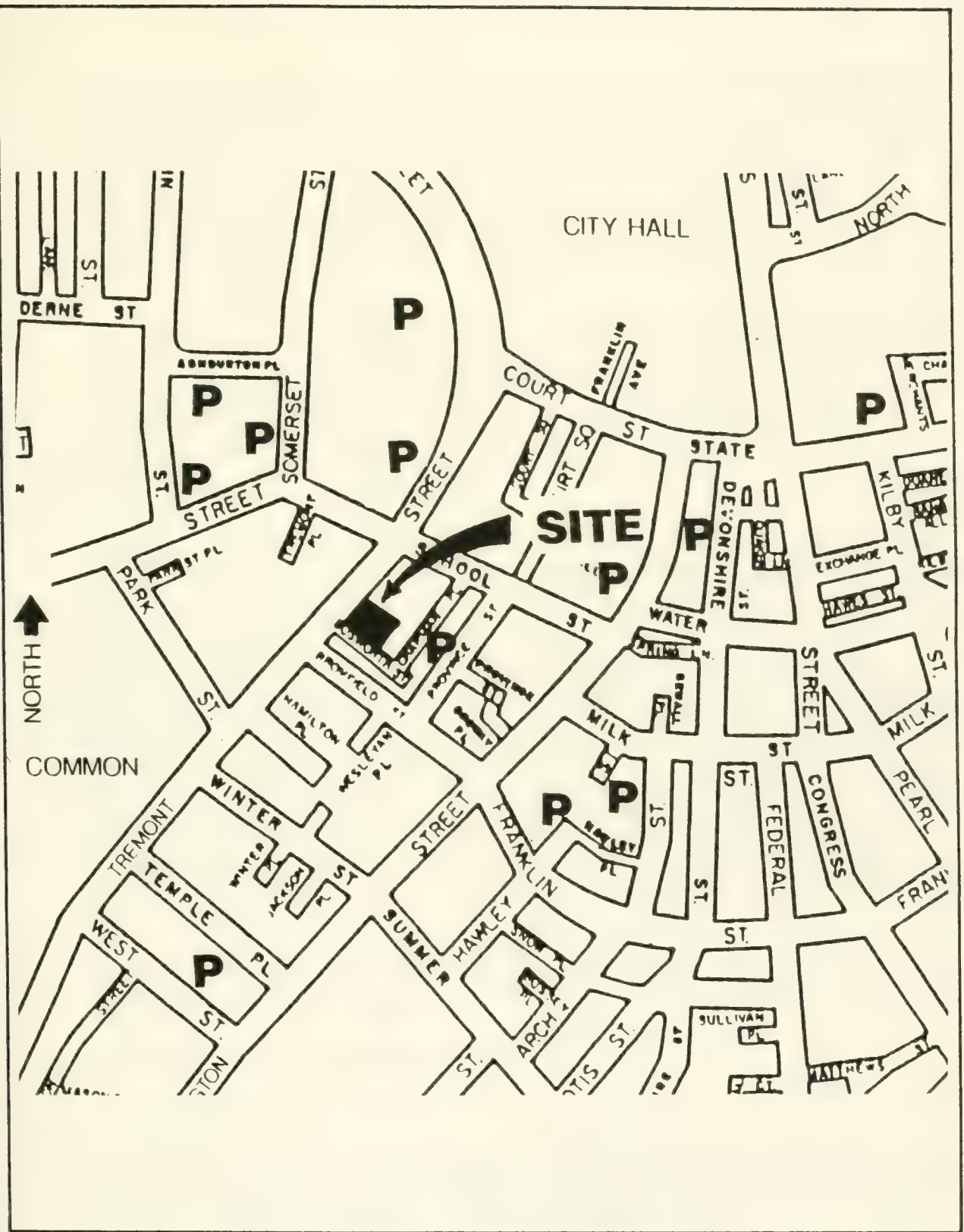
In addition to the site, it is expected that during the target year of 1995, there will be a general increase in traffic resulting from normal background growth as well as increases resulting from specific projects in the immediate area.



MBTA LOCATIONS/
WALKING DISTANCES



Figure 6.2-3



NEARBY PARKING LOCATIONS



Figure 6.2-4

For the project area, the City of Boston has been assuming an annual growth rate of 0.5 percent per year. This has been used for other project analyses. Applying this factor to existing traffic volumes, an increase of three percent is expected from now until the target year of analysis. In addition, there are projects in the area that have been identified that will add specific volumes to the street network in the study area over and above the background traffic growth rates.

To simplify the analysis for both the reviewer and preparer, projects cited as background in the Boston Crossing DPIR have also been used to develop the No Build condition for this project. Using the Boston Crossing DPIR as a basis was encouraged by the BTB in order to provide consistency between the analyses. The future Build year of 1995 was also used (instead of a five year projection to 1994) to reinforce this consistency.

Generally, the background traffic generators cited in the Boston Crossing analysis are located south and east of this project's study area. As a result of this fact, the trips associated with those project that would travel through this study area are limited. Included in these background volumes were the trips related to the Boston Crossing project itself. Not included in these background volumes were the trips determined to be associated with the Tremont Temple/90 Tremont Street project. For several projects (45 Province Street, One Bowdoin Square, 110-120 Tremont Street, and 73 Tremont Street), their location will likely result in a more complex impact on the study area intersections. For each of these projects, a separate analysis was done to determine the extent of the site trips within the study area. All of this information is presented in Appendix A of this report.

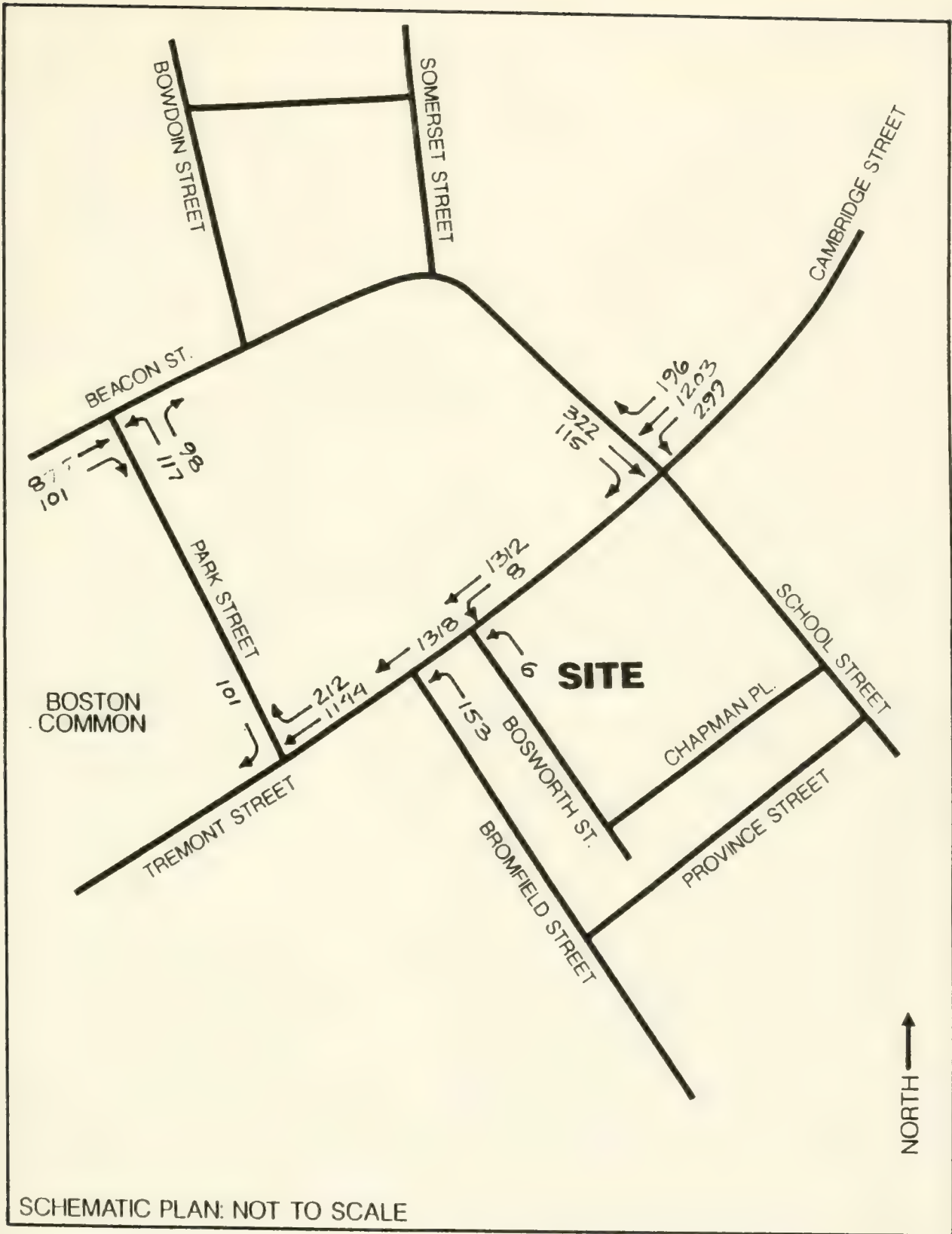
The future, 1995 No Build traffic volumes are presented as Figures 6.3-1 and 6.3-2, No Build Traffic Volumes, AM and PM Peak Hour, respectively.

6.4 Trip Generation and Distribution

6.4.1 Project Land Uses

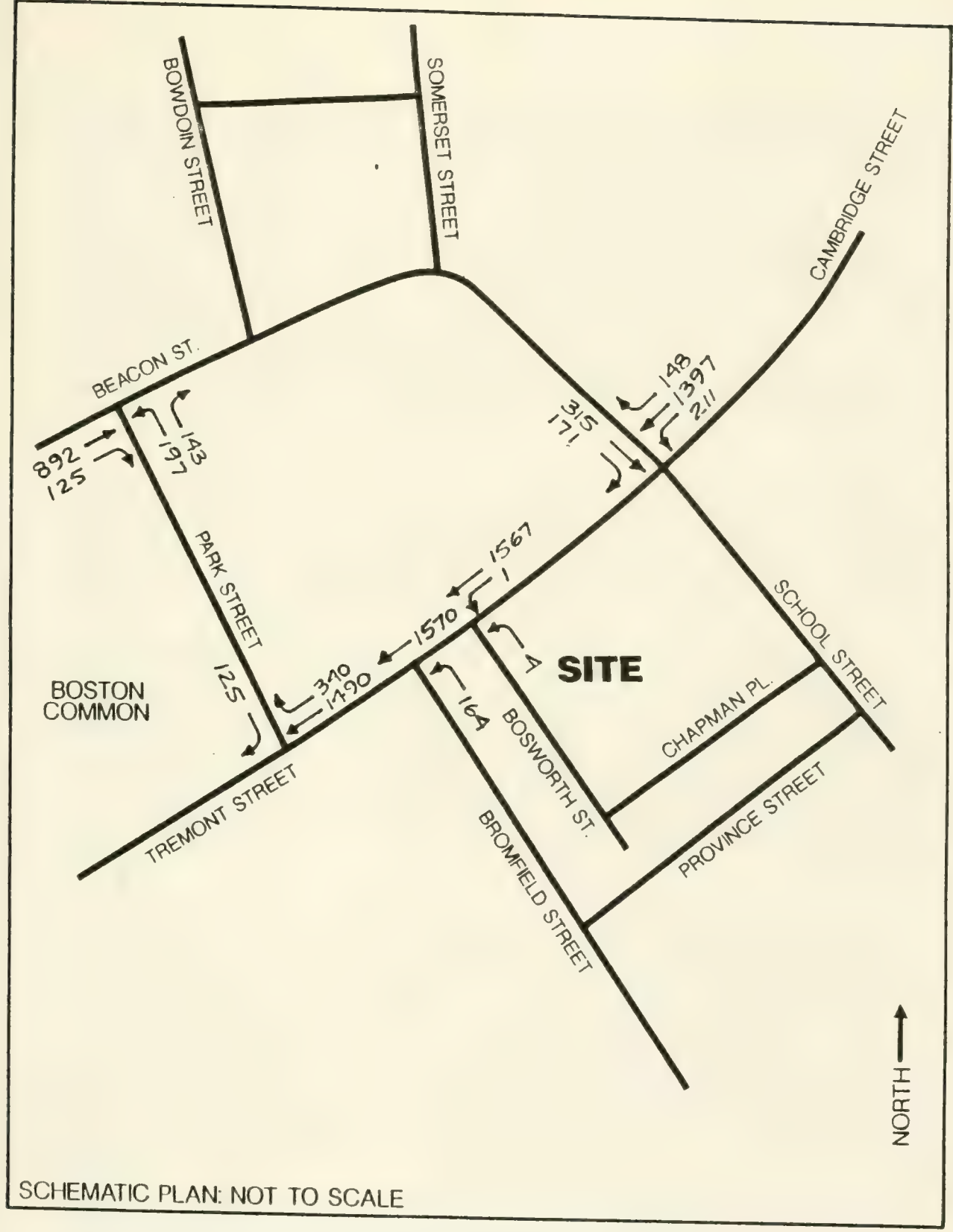
To simplify this analysis for both the analyst and the reviewer, several assumptions have been made regarding land use and trip generation. These assumptions are considered to be conservative and are discussed below.

The proposed project includes office, retail, "Church", and child care space. For projecting new trips to and from the site, however, the only relevant land use is for the office space. Under Existing conditions the Church, retail, and restaurant uses generate trips. These trips are a part of



1995 NO BUILD
TRAFFIC VOLUMES
AM PEAK HOUR

Figure 6.3-1



1995 NO BUILD
TRAFFIC VOLUMES
PM PEAK HOUR

Figure 6.3-2

the existing volumes documented previously. For each of these uses, the square footage proposed is less than presently exists at the site. By assuming these trips will not change either up or down simplifies the analysis.

This assumption is reasonable considering the market population for these uses. The retail and restaurant uses for the site generally will not be generating trips from outside the study area. Almost exclusively the retail and restaurant uses cater to local needs of those already in the immediate area, either those working nearby or traveling through the area on foot. Trips to these uses are considered "impulse" trips; typically people shopping or dining at downtown locations such as this one are not making a special trip to the area.

Vehicle trips to and from the site under Existing conditions for these uses are not documentable without questionnaire type surveys, which would be impractical. Therefore, it has been assumed that even though the square footage for these uses will all be reduced under the proposed plans, the trips to and from them will remain unchanged.

The "Church" use of the site presently includes 77,500 square feet. This will be reduced to 70,600 square feet. For obvious reasons, it is difficult to establish the trip generating characteristics for this land use (the ITE report includes only a few examples and the report warns of using the data because of the small sample size.) Since the use of this portion of the project will generally remain as is, it has been assumed that the trips for this portion of the project will be the same both before and after the proposed changes.

The child care on-site is not expected to be a significant trip generator in and of itself. The children cared for here will likely be from three sources: residents of the area who walk their children to this location prior to walking, driving, or using public transit to reach their jobs; employees of nearby buildings who find this to be a convenient location, and employees in this building, which would be the most likely scenario once the building is fully occupied. Therefore, the trips for this land use are not specifically expected to generate additional vehicle trips to or from the site.

There will be trips related to the child care employees. Typically, day care providers begin work prior to--and remain at work later than--typical office employees, since they must be on hand before children are dropped off and remain until children are picked up by parents. Because of this long day, there is often a turnover of personnel around mid-day. This does not actually increase the mid-day trips, however, since these in and out trips generally replace

round trips for lunch by all-day employees.

To incorporate these employee trips for the child care facility, it has been assumed that their trip generation characteristics for this use will be similar to the office use on site. [For the offices, a rate of about 1.5 to 2.0 trips per thousand square feet during the peak hour has been used. This would reflect a trip rate of 6 to 8 trips for the child care use for the peak hour.]

The remaining proposed land use is the office space. The square footage proposed calls for 140,400 square feet of offices. Adding the child care space to that square footage results in a total of 144,400 square feet to be used for the analysis of new trips to the site.

6.4.2 Trip Generation

The trip generation projections for this project have followed the same general methodology as was used for the Boston Crossing analysis. The methodology was accepted by the BTB and use of the same procedures and the same factors concerning vehicle occupancy and modal splits was encouraged.

The Institute of Transportation Engineers (ITE) Trip Generation Report, Fourth Edition was utilized as the basis of the trip generation data. Although this report presents the most comprehensive database for trip generation data its basis for office trip generation is primarily from suburban locations and must be adjusted for use in a downtown location such as this. The ITE report presents information on vehicle occupancy. By adjusting the trip generation outputs by the vehicle occupancy factor provides a person-trip rate for the proposed project. The trip generation equations from the Trip Generation Report are presented in Table 6.4-1. This Vehicle/Person Trip Generation table also presents the incorporation of the vehicle occupancy rate of 1.2 persons per vehicle, adjusting the vehicle trips into person trips.

The person trips were categorized into work and non-work trips, based on data presented in the Central Transportation Planning Services CTPS/CSI memo Trip Generation for the Central Artery/Third Harbor Tunnel. [A work trip is considered to be by an employee of the site; a non-work trip may be someone who is working but is not an employee working in this building.] Of the 287 inbound site trips in the morning peak hour, 80 percent are for work purposes and 20 percent for non-work purposes. All 43 outbound trips in the morning peak hour are projected to be all non-work related.

For the evening peak hour trips, 35 percent of the 52

inbound trips are work related with the remaining 65 percent non-work related. For the 269 outbound trips, the ratio is 85 percent work related and 15 percent non-work related as shown in Table 6.4-1. The distinction between the two types of trips is necessary, since the modal splits and vehicle occupancy generally varies depending on the type of trip made.

The modal splits for the analysis are the same as the splits used for the Boston Crossing analysis. These in turn were adapted from the TAMS report for the Midtown Cultural District (originally from Parking in Downtown Boston, Cambridge Systematic, Inc., 1983). As was done for the Boston Crossing project, a five percent walk component has been incorporated. These modal split assumptions are presented and incorporated into the analysis in Table 6.4-2, Peak Hour Trips for Auto/Transit/Walkers.

In converting the person-trips by automobile to vehicle trips, the vehicle occupancy rates used are the same as those accepted by the BTM for the Boston Crossing analysis, which are lower (i.e., more conservative) than those used for other downtown projects. The adjustment for vehicle occupancy is included in Table 6.4-3, Vehicle Occupancy Adjustment.

Based on these assumptions, the morning and evening peak hour site-related trips by automobile, transit, and walking have been determined.

6.4.3 Automobile Trip Distribution

Automobile trip distribution has been generally established by the BTM and is presented in their Transportation Access Plan Guidelines. The study area access is relatively restricted by the downtown one-way system. Tremont Street is the exclusive access for approaching vehicles. Access to Tremont Street is available via Beacon, Cambridge, and State Streets serving the several directions of approach. From the site, Tremont Street is the main egress route, although some vehicles may choose to use Chapman Place depending on its availability. At Park Street, departing vehicles can change directions to reach Beacon Street. Beacon Street westbound leads to the Back Bay and Storrow Drive west, while Beacon Street eastbound leads to School Street eastbound and Bowdoin Street which subsequently leads to Cambridge and Sudbury Streets to the northwest and northeast.

Travelling to the site from the west, through the Back Bay or along the Charles River, access is not direct, since the one-way system prohibits a direct line along the Garden and Common to Beacon Hill. Traffic from this direction must detour around the Public Garden before finally approaching

TABLE 6.4-1

TRIP GENERATION CALCULATIONS

ITE Trip Generation Equations:

At 144,400 square feet of offices--

AM Peak Hour:

$$\begin{aligned} \text{Ln}(T) &= .86 \text{ Ln}(A) + 1.34 \\ 87\% \text{ inbound} / 13\% \text{ outbound} &= 239 \text{ vehicles inbound, } 36 \text{ vehicles outbound} \end{aligned}$$

PM Peak Hour:

$$\begin{aligned} \text{Ln}(T) &= .83 \text{ Ln}(A) + 1.46 \\ 16\% \text{ inbound} / 84\% \text{ outbound} &= 43 \text{ vehicles inbound, } 224 \text{ vehicles outbound} \end{aligned}$$

Conversion to Person Trips:

Above vehicle trips X 1.2 persons/vehicle--

$$\begin{aligned} \text{AM Peak Hour} &= 287 \text{ persons inbound, } 43 \text{ persons outbound} \\ \text{PM Peak Hour} &= 52 \text{ persons inbound, } 269 \text{ persons outbound} \end{aligned}$$

Conversion to Work/Non-Work Trips:

AM Peak Hour Person Trips--

$$\begin{aligned} \text{INBOUND: } 80\% \text{ work}/20\% \text{ non-work} &= 230 \text{ work persons inbound, } 57 \text{ non-work persons inbound} \\ \text{OUTBOUND: } 100\% \text{ non-work} &= 43 \text{ non-work persons outbound} \end{aligned}$$

PM Peak Hour Person Trips--

$$\begin{aligned} \text{INBOUND: } 35\% \text{ work}/65\% \text{ non-work} &= 18 \text{ work persons inbound, } 34 \text{ non-work persons inbound} \\ \text{OUTBOUND: } 85\% \text{ work}/15\% \text{ non-work} &= 229 \text{ work persons inbound, } 40 \text{ non-work persons inbound} \end{aligned}$$

VEHICLE/PERSON
TRIP GENERATION



TABLE 6.4-2

MODAL SPLIT

	AM Peak Hour		PM Peak Hour	
	IN	OUT	IN	OUT
For Work Trips:				
Total Workperson Trips	230	0	18	229
By Auto @ 30 percent	69	0	5	69
By Transit @ 65 percent	150	0	12	149
By Walking @ 5 percent	11	0	1	11
For Non-Work Trips:				
Total Non-workperson Trips	57	43	34	40
By Auto @ 27.5 percent	16	12	9	11
By Transit @ 57.5 percent	33	25	20	23
By Walking @ 15 percent	8	6	5	6

PEAK HOUR TRIPS FOR
AUTO / TRANSIT / WALKERS



TABLE 6.4-3

VEHICLE TRIPS

For Work Trips:

$$\text{VEHICLE TRIPS} = \text{Person Trips} / 1.6 \text{ persons per vehicle}$$

For Non-Work Trips:

$$\text{VEHICLE TRIPS} = \text{Person Trips} / 1.4 \text{ persons per vehicle}$$

	AM Peak Hour		PM Peak Hour	
	IN	OUT	IN	OUT
	----	----	----	----
Work Person Trips	69	0	5	69
Non-Work Person Trips	16	12	9	11
	----	----	----	----
TOTAL PERSON TRIPS	85	12	14	80
Work Vehicle Trips	43	0	3	43
Non-Work Vehicle Trips	11	9	6	8
	----	----	----	----
TOTAL VEHICLE TRIPS	54	9	9	51

The Total Vehicle Trips have been distributed onto the study area roadways as site-related trips.

VEHICLE OCCUPANCY ADJUSTMENT



the site via Beacon Street past the State House. An alternative to this route would be to use Storrow Drive eastbound to Cambridge Street. Traffic making its approach to the site via Beacon Street is generally from the south and southwest rather than the west in the direction of the Back Bay or the Brighton/Allston areas.

Vehicles approaching via Beacon Street must detour around the Public Garden, but the return movement can be made relatively directly via Tremont and Park Streets. A good alternative to reaching the site from the west is along Storrow Drive, but even if this traffic exits at Arlington Street, it must detour around the Public Garden because of the one-way section of Beacon Street between Arlington Street and Charles Street. Furthermore, Beacon Street is one-way outbound. Each of the major approach and departure routes is shown in Figure 6.4-1, Approach and Departure Routes.

From the north on the expressway, access via the ramps at North Station (Blackstone Market, Sumner Tunnel) provide the most direct routing. It is also a route that is not badly congested during the peak hours. Access to the expressway south is not very direct. In an inbound direction, access to the south via the expressway is probably best along the Northern Avenue ramps, possibly utilizing State Street. However, in an outbound direction, travel along Tremont Street with access at the Berkeley Street ramps, appears to be the most direct and fastest route to the Southeast Expressway.

Access to the Massachusetts Turnpike is available either via Storrow Drive, the Copley Square ramps, or the expressway south. Outbound, a routing along Tremont Street to the slip-ramp at Isabella/Arlington Street provides the quickest exit route.

The routing to and from the Sumner and Callahan Tunnels is fairly direct. Using the School Street/Court Street one-way pair, the route along Congress Street and North Street is fairly short even during peak hours. A necessarily circuitous route for inbound traffic, however, could result in some traffic diverting to New Chardon Street.

Storrow Drive provides access to the site via use of Cambridge Street/Tremont Street or via the more circuitous route around the Garden and Common, forced by the one-way roadway.

Based on these approach routes and the connections to these routes beyond those discussed above, a directional distribution for within the study area has been determined. For inbound trips, 37 percent are expected to approach from Beacon Street past the State House and turning right at

Tremont Street to reach the site. Fifty-nine percent are expected to approach the site from Cambridge Street, including trips from State Street. The remaining four percent of the site-trips are expected to use the more local streets through the downtown area from the southeast, finally entering the study area along Bromfield Street and circling the block via Park Street and Beacon Street to reach the site.

Outbound, the majority of site trips, 60 percent, are expected to depart via Tremont Street toward the south past the Common. Ten percent are expected to use Park Street to Beacon Street west, 15 percent are projected to use Park Street and Beacon Street to travel to Bowdoin Street ultimately in the direction of Cambridge Street, and the remaining 15 percent are expected to use School Street -- either via Chapman Place or circle the block by way of Park and Beacon Streets. Figure 6.4-2, Study Area Directional Distribution, presents these distributions with the specific regional distribution percentages (from the BTB data) included.

6.5 Future Vehicular Conditions

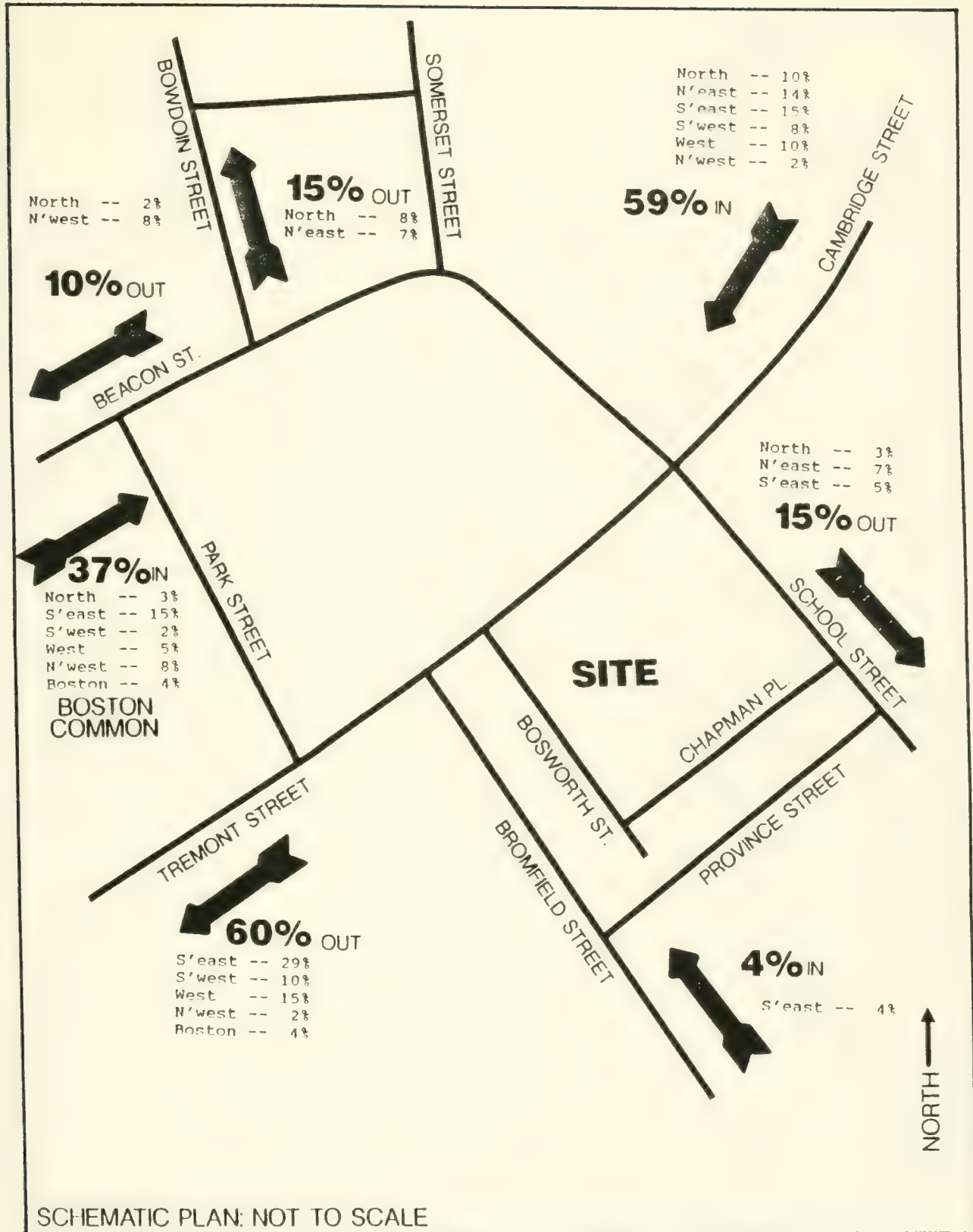
6.5.1 Site-Related Trips

Combining the Trip Generation projections of Section 6.4.3 with the distribution of Section 6.4.4 provides the actual additional vehicle trips that can be expected at study area intersections as a result of the project. These are presented in Figures 6.5-1 and 6.5-2, Project Site-Related Traffic Volumes, AM and PM Peak Hour, respectively.

The No Build condition presented earlier represents 1995 traffic volumes without the project in place. Adding these site-related vehicle trips to the No Build traffic volumes provides a Build condition for 1995. This is shown for the morning peak hour in Figure 6.5-3, 1995 Build Conditions, AM Peak Hour and for the evening peak hour in Figure 6.5-4, 1995 Build Conditions, PM Peak Hour.

6.5.2 Future Build Traffic Operations

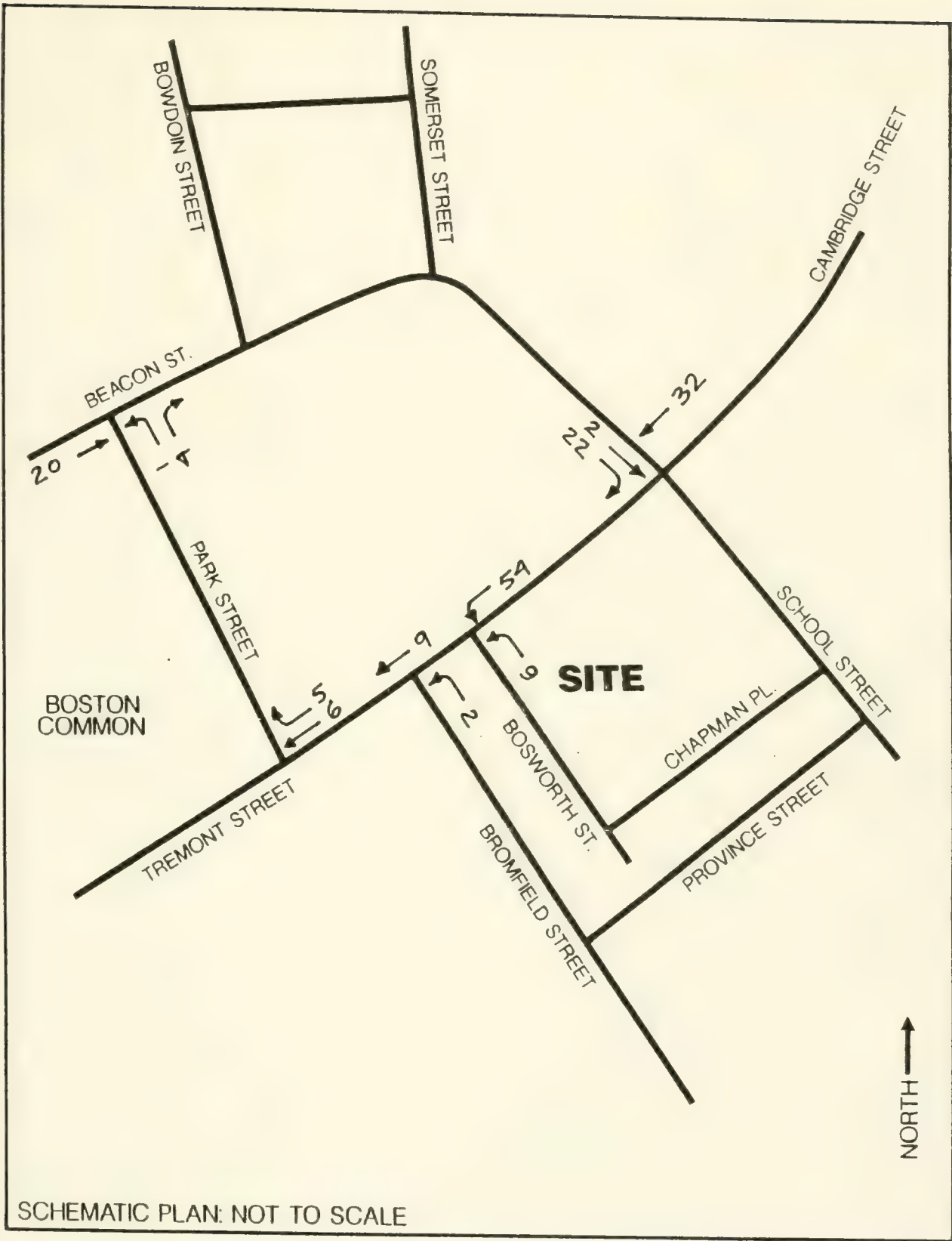
The intersections in the study area have all been evaluated using the CINCH computer program that models the intersection capacity analysis presented in the 1985 Highway Capacity Manual (HCM). The Level of Service (LOS) of an intersection is determined based on an average delay per vehicle during the peak hour. LOS ranges from "A", which presents little or no delay, to "F", which represents congested conditions. A description of the LOS, taken from the HCM, is presented in Appendix A along with the printouts from the calculations done for the study area intersections.



STUDY AREA
DIRECTIONAL DISTRIBUTION



Figure 6.4-2



PROJECTED SITE-RELATED
TRAFFIC VOLUMES
AM PEAK HOUR

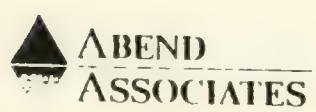
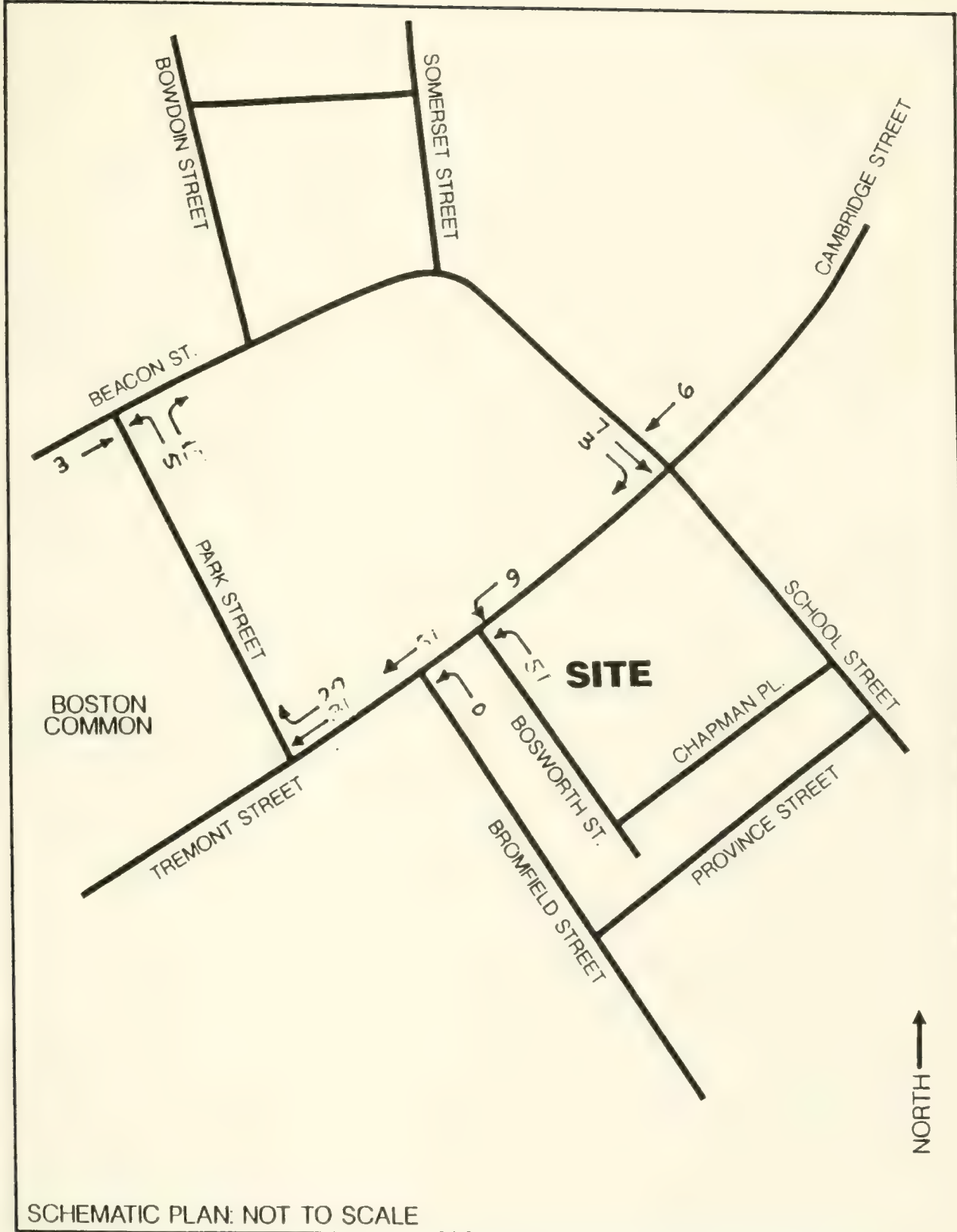


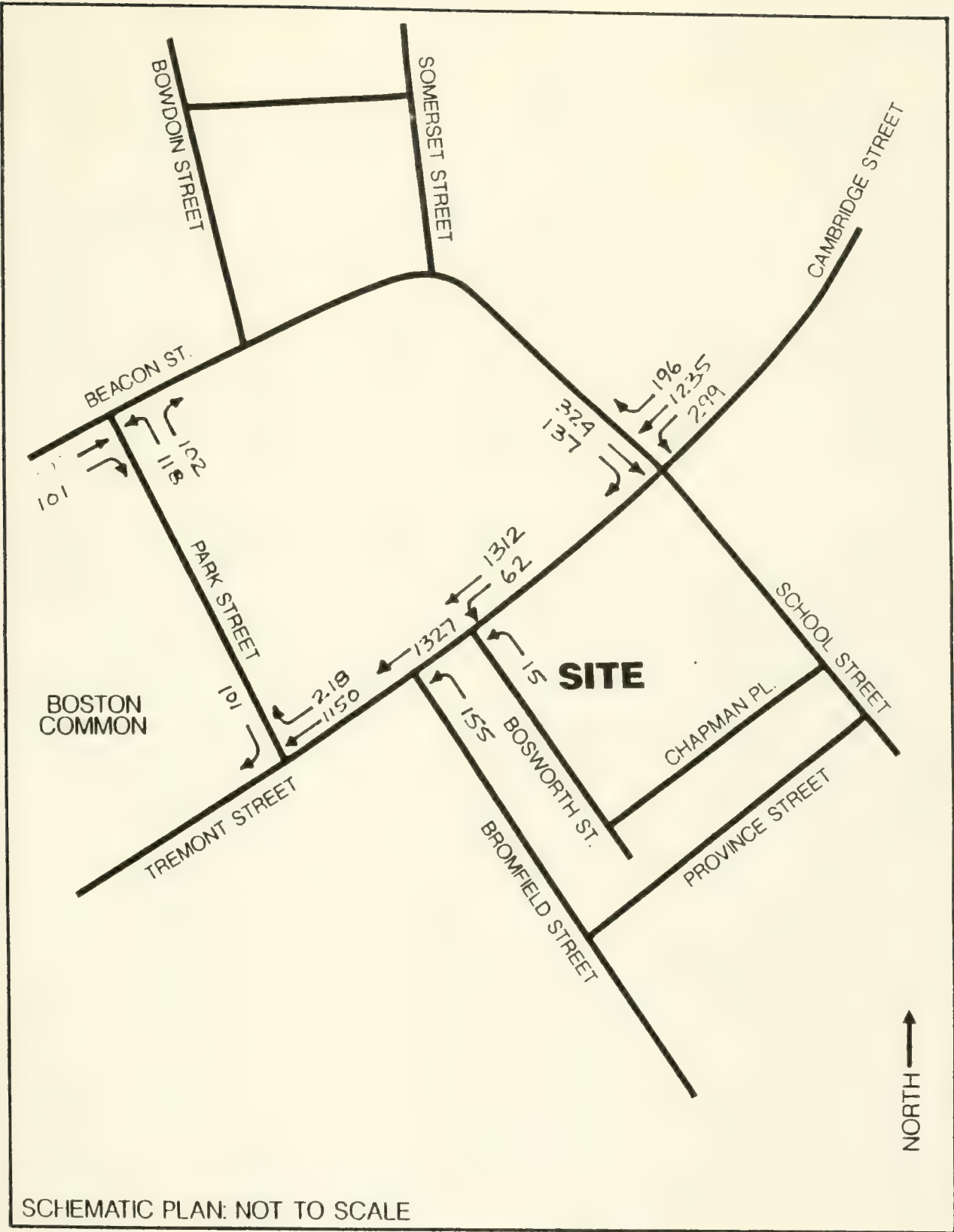
Figure 6.5-1



PROJECTED SITE-RELATED
TRAFFIC VOLUMES
PM PEAK HOUR

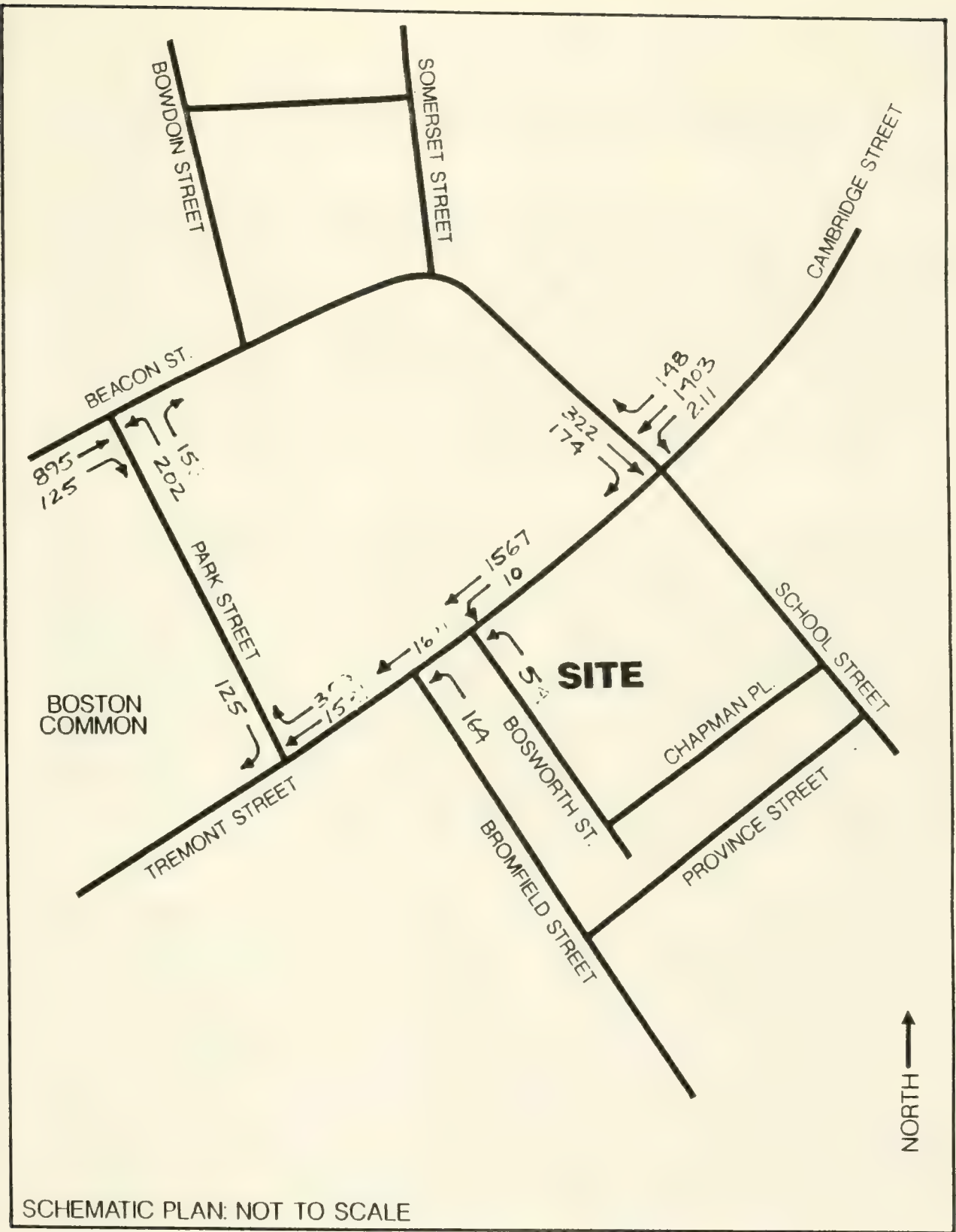


Figure 6.5-2



1995 BUILD
TRAFFIC VOLUMES
AM PEAK HOUR

Figure 6.5-3



1995 BUILD
TRAFFIC VOLUMES
PM PEAK HOUR

Figure 6.5-4

Table 6.5-1, Intersection Level of Service Summary, shows the LOS and the average delay per vehicle for each of the intersections. Also, each intersection is discussed separately below.

Tremont Street @ Park Street: This intersection under Existing conditions operates at LOS B with a delay of between nine and ten seconds. Under the No Build conditions the LOS remains at LOS B during the morning peak hour; however, it drops to LOS C during the evening peak hour and between 24 and 25 seconds delay per vehicle on average. This delay represents a borderline C/D condition, since 25 seconds delay is the dividing point between these two LOS designations. Under the Build condition, there is virtually no change during the morning peak hour from the No Build condition; however, the evening peak hour drops to LOS D with approximately a 27 second delay.

Tremont Street @ Beacon Street: Under Existing conditions this intersection operates at LOS B during the morning peak hour and LOS C during the evening peak hour. Under the No Build condition, the LOS drops to D during the morning peak hour and LOS F during the evening peak hour with delays of approximately 30 and 65 seconds, respectively. Under the Build conditions the LOS remains unchanged for both peak hours with a drop to approximately 37 seconds during the morning and to approximately 68 seconds delay during the evening peak hour. The noticeable drop during the morning peak hour in terms of average delay results from the fact that all site traffic passes through this intersection to reach the site. During the evening, because most traffic is in an outbound direction to the south along Tremont Street, very little traffic uses this intersection.

Park Street @ Beacon Street: During the morning peak hour, this intersection operates at LOS C with approximately a 20-second delay while during the evening peak hour LOS is at E with about a 45-second delay. Under the No Build condition LOS drops to D during the morning peak hour and LOS F during evening peak hour with delays of approximately 29 and 89 seconds, respectively. During the morning peak hour the LOS remains unchanged with the delay dropping approximately 3 seconds to 32 seconds per vehicle; during the evening the drop is approximately 10 seconds per vehicle. The increase in delay results from the 25 percent of site trips in this direction during the evening peak hour using a single, uphill approach along Park Street.

6.5.3 Loading Dock Access

The project will include a loading area (shown in the Schematic Site Plan, Exhibit 6.1-2) to be located off of Bosworth Street within the limits of the building structure. The loading dock will be accessed similarly to the garage.

TABLE 6.5-1

LOCATION	AM PEAK HOUR			PM PEAK HOUR		
	1989 EXISTING	1995 NO-BUILD	1995 BUILD	1989 EXISTING	1995 NO-BUILD	1995 BUILD
TREMONT STREET @ PARK STREET	B/ 9.5	B/12.7	B/12.8	B/ 9.8	C/24.6	D/27.4
TREMONT STREET @ BEACON STREET	B/12.5	D/30.0	D/36.7	C/17.8	F/65.3	F/67.9
PARK STREET @ BEACON STREET	C/20.1	D/28.8	D/31.8	E/44.9	F/89.2	F/99.7
TREMONT STREET @ BRONFIELD STREET	A/ 4.4	B/ 5.4	B/ 5.4	A/ 3.9	B/ 5.8	B/ 5.9

X/00.0 -- LEVEL OF SERVICE DESIGNATION / AVERAGE DELAY PER VEHICLE IN SECONDS

INTERSECTION
LEVEL OF SERVICE SUMMARY



The loading area will not be large enough to accommodate a semi-tractor trailer unit easily especially while maintaining access to the garage elevators. As is standard procedure, loading will be restricted to non-peak periods. Due to the size of the building, the number of tractor trailer deliveries will be minimal. At such times that they are necessary, Bosworth Street can serve as a loading zone and except for maneuvering backwards into Bosworth Street from Tremont Street, there will be no need for infringement onto any busy public streets. In addition, deliveries by semi-tractor trailers will be scheduled so as not to coincide with peak periods along Tremont Street for either vehicles or pedestrians. These deliveries would be scheduled for the evening or weekends when possible.

6.6 Public Transportation Impacts

6.6.1 Transit System

The MBTA system is presently undergoing a series of improvements/enhancements through several major and minor programs designed to enhance transit uses and increase capacities. These include extending loading platform lengths to allow six-car trains (versus four-car trains) along the Red, Orange, and Blue lines; improvements at South Station; North Station improvements linked to the proposed New Boston Garden; ongoing track and signal upgrading to increase operational efficiencies and enhance safety; and modernization at downtown stations. Further, commuter rail lines are being extended and parking along commuter lines is being increased. The potential restoration of the Old Colony commuter line is also being evaluated.

Because of the relatively small size of this project compared to others in the vicinity of the downtown area, the impacts on transit are not considered to be substantial. Based on the modal splits presented earlier under Trip Generation, it is expected that during the morning peak hour 183 inbound transit trips and 25 outbound transit trips will be generated by this project. During the evening peak hour the inbound trips are expected to be at 32 persons while outbound during the evening 155 people are expected to use transit for their trip from the site.

The recent study for Boston Crossing prepared by Bruce Campbell & Associates presented a relatively detailed analysis of the transit ridership based on data both from the MBTA and other sources related to development at other locations (International Place and the Kingston-Bedford-Essex or One Lincoln Street development). The Boston Crossing project is expected to generate approximately 2,100 evening peak hour transit trips. This project, during its morning peak hour, which is projected to be the higher of the two daily peak hours, will generate

approximately 208 such trips.

Since the preparation of the Boston Crossing DPIR the development program for the Tremont Temple/90 Tremont Street project has been reduced, therefore the number of trips associated with the Tremont Temple/90 Tremont Street project has dropped from approximately 290 trips to the 208 trips cited above. Because of the small number of site-related transit trips, a less detailed analysis has been done for the project impact on the transit system.

The number of transit trips generated by the project has been calculated in a previous section. Table 6.6-1, Transit Trip Distribution, presents these transit trip totals along with the projected distribution on the several rail lines and buses available. The peak hour volumes are comparable with approximately 205 transit trips during each peak hour. The greatest volume of transit trips is expected for the Red line southbound, which is expected to carry 18 percent of the site-related transit trips, or 38 people to this site during the morning. The next greatest volume increase is expected on the Green line to the west and the Red line to the north (33 persons, 16 percent of the total project trips per line).

An estimate of the number of transit trips related to each of the four local MBTA stations has been made and is included in Table 6.6-1. It is expected that 45 percent of transit trips related to this site will use the Park Street Station located less than one block to the south. These include trips to the Red line, both north and south, the Green line both east and west, and commuter rail trips through both North and South Station via the Green and Red lines, respectively. The Government Center Station is expected to carry 14 percent of the transit trips serving the Green line east, the Blue line north, and the commuter rail through North Station.

The State Street Station, the farthest from the site of the four local stations, is expected to carry 18 percent of site trips to the Orange and Blue lines toward the north. Downtown Crossing is expected to serve both the Orange line south, the Red line south, and those using the Commuter Rail to the south through South Station at 23 percent of site trips. In all cases, the morning peak hour trips are slightly higher than the evening peak hour trips. These numbers include both inbound and outbound trips to the site.

As stated in the analysis for Boston Crossing, the Volume to Capacity (V/C) ratios under Build conditions for that project range from a low of .43 on the Red line northbound to a high of .96 on the Brigham Circle Green line outbound (pg. IV-99). These ratios include 286 evening peak hour

TABLE 6.6-1

TRANSIT TRIP DISTRIBUTION

		AM Peak Hour		PM Peak Hour	
		IN	OUT	IN	OUT
Total Transit Trips from Trip Generation Calculations		183	25	32	172
Red Line:	North	29	4	5	28
	South	33	5	6	31
Orange Line:	North	15	2	3	14
	South	20	3	4	19
Blue Line:	North	18	3	3	17
Green Line:	West	29	4	5	28
	East	4	0	1	3
Commuter Rail:	North	7	1	1	6
	South	9	1	1	9
Buses:	Local	15	2	3	14
	Express	4	0	0	3

Based on Distribution used for Kingston-Bedford-Essex DEIS, January 1989 by Howard/Stein-Rudson Associates.

TRANSIT TRIP DISTRIBUTION



trips related to the Tremont Temple/90 Tremont Street project. These 286 trips represent 40 percent more trips than are presently projected during the evening peak hour and 38 percent more trips than are projected for the morning peak hour for this project.

Incorporating a development program for this site that is larger than what is presently proposed results in a conservative analysis for Boston Crossing; the reduced program for Tremont Temple/90 Tremont Street will generate far fewer transit trips than was previously estimated. Since the passenger volumes on the MBTA transit lines were not expected to exceed capacities under that more conservative analysis, the conclusion can be drawn that with the present development program incorporated, the analysis would show lower, more favorable V/C ratios.

6.6.2 Pedestrian/Sidewalk Impacts

Based on the modal splits presented in the Trip Generation Section of this analysis, the number of walking trips to and from the site represent only 25 morning peak hour trips and 24 evening peak hour trips. In general, the number of trips associated with the project that are pure walking trips in the downtown area is relatively insignificant. When combined with the trips related to transit use the number of morning pedestrian trips within the study area increase to approximately 230 trips during each peak hour with approximately 85 percent of those in the primary direction (inbound in the morning, outbound in the evening).

There are three immediate directions for pedestrian flows: south on Tremont Street toward the Common and Park Street MBTA station, north on Tremont Street toward Government Center, and east along Bosworth Street connecting to Province Street via the Province House Steps and subsequently toward Bromfield Street or School Street. A summary of pedestrian trips and their general orientation around the site is presented as Table 6.6-2, Pedestrian Distribution.

In conjunction with the traffic counts along Tremont Street, pedestrian counts were done at the intersections of Tremont and Bosworth Streets during both the morning and evening peak hours. In front of the site, during the morning peak hour there were a total of 704 pedestrians counted. The count includes only those along the east side of Tremont Street adjacent to the site. During the evening peak hour the volume was 1,556 pedestrians. During the morning peak hour approximately 70 percent of the pedestrians were in a northbound direction toward Government Center, 27 percent were oriented toward the Common, and the remaining 3 percent were oriented east along Bosworth Street.

PEDESTRIAN TRIP TOTALS

	AM Peak Hour		PM Peak Hour	
	IN	OUT	IN	OUT
Transit Trips	183	25	32	172
Walking Trips	19	6	6	18
Total Pedestrians	202	31	38	190
Initial Direction to and from Site: -----				
Boston Common/Tremont St. South	88	13	16	80
Gov't Center/Tremont St. North	28	4	6	29
Beacon Hill: via Park Street	2	1	0	2
via Beacon Street	2	0	1	2
Washington St. via Province House Steps	46	6	8	45
School St. via Province House Steps	36	7	7	32

NOTE: Trips toward each particular transit station have been estimated based on station proximity, regional orientation, and the stations relative position to other stations in the system. For example, the State Street Station is farther than the Government Center Station from the site however Blue Line riders will use both stations depending on factors such as: Would an outbound rider expect to get a seat at the Government Center stop rather than at the State Street stop where an open seat would be less likely since it is the next stop? Inbound, riders on this line would have a choice: Get off sooner but have a longer walk or ride longer and have a shorter walk. Individual preferences will determine the actual splits, which can only be estimated here.

Trips were estimated as follows:

- 14 percent toward Government Center;
- 18 percent toward State Street;
- 23 percent toward Downtown Crossing; and
- 45 percent toward Park Street.

PEDESTRIAN DISTRIBUTION



During the evening peak hour 65 percent of the trips were oriented toward the Common, 31 percent toward Government Center, and the remaining 2 percent toward the east on Bosworth Street. The evening peak hour volumes are much larger than the morning peak hour since there are a large number of shopping and other non-office oriented trips occurring during that period compared to the morning peak hour. It is clear that the evening peak hour, because of shopping related trips, would be the higher peak hour.

It is expected that of the 228 evening peak hour pedestrian trips related to the project, approximately 100 are oriented south along Tremont Street; approximately 50 oriented east on Bosworth Street; and approximately 80 oriented north toward Government Center. The 100 trips oriented toward the Common represent the largest directional increase related to the project and constitute approximately 6 to 6-1/2 percent of the existing evening peak hour volumes for this sidewalk. This represents less than two people per minute added to the existing sidewalk volumes. This minor volume increase will not noticeably impact pedestrian operations along Tremont Street nor will it create a serious congestion problem for this sidewalk.

Trips oriented toward School Street are expected to use the Province Street Steps rather than Tremont Street to School Street. The hotel entrance/passenger loading area along School Street represent a minor bottleneck that can easily be avoided via Province Street.

6.7 Parking Supply Impacts

As stated earlier, the existing parking supply in the vicinity of the site has attained an equilibrium such that some spaces are available for both monthly parkers and visitors at such locations as at the Province Street, One Beacon Street and Center Plaza garages. Based on ITE data for average daily trips, it is expected that approximately 900 person round trips will be generated by this project each day. Of these 65 percent are expected to be work-related, employee trips. Converting these trips by the 1.2 vehicle occupancy factor and adjusting for 30 percent auto use and the 1.6 person per vehicle work-related occupancy rate found in the downtown area results in 133 parking spaces needed for employees generally considered to be all-day parking. Eighty spaces are proposed to be provided on-site leaving a deficit of approximately 53 spaces. This calculation is presented in Table 6.7-1, Parking Demand.

It is expected that of the total daily person trips to and from the site, 380 person round trips will be made for non-work purposes related to the offices. Based on the auto use and vehicle occupancy rates presented earlier, this

TABLE 6.7-1

PARKING DEMAND

ITE Equation for Daily Vehicle Trips:

$$\ln(T) = .75 \ln(A) + 3.77$$

Calculated @ 144,400 square feet	= 1807 person-trips, or 904 person-round-trips
904 @ 1.2 persons/vehicle	= 1085 person-round-trips per day
1085 @: 65 % work related	= 705 person-round-trips per day
35% non-work related	= 380 person-round-trips per day
705 workperson-round-trips @ 30% auto	= 212 workperson-round-trips per day
380 non-workperson-round-trips @ 27.5% auto	= 105 non-workperson-round-trips per day
212 workperson-round-trips @ 1.6 persons/vehicle	= 133 work-related-vehicle-round-trips per day
105 non-workperson-round-trips @ 1.6 persons/vehicle	= 75 non-work-related-vehicle-round-trips per day
133 work-related-vehicle-round-trips per day @ 1 vehicle per space per day	= 133 PARKING SPACE DEMAND FOR EMPLOYEES
	- 80 PARKING SPACES FOR EMPLOYEES PROPOSED ON-SITE

	53 PARKING SPACE DEFICIT FOR EMPLOYEES
75 non-work-related-vehicle-round-trips per day @ 3 vehicles per space per day	= 25 PARKING SPACE DEMAND FOR FOR NON-EMPLOYEES

	78 TOTAL PARKING SPACE DEFICIT FOR PORJECT

PARKING DEMAND



translates to approximately 75 non-work related vehicles during the course of a day. Assuming a turnover of three vehicles per space per day results in a demand of 25 spaces for non-worker related trips. Combining this with the 53 space deficit for workers results in a total deficit of 78 spaces for the office building on this site.

6.7.1 On-Site Garage Operations

The project calls for 80 underground parking spaces to be located on two levels and serviced by two elevators accessed from Bosworth Street (see Figure 6.1-2). Information from other area parking garages indicates that approximately 40 percent of the monthly parkers arrive during a single peak hour during the morning. Further, approximately 40 percent of the peak hour volume arrives during a single 15 minute period. For the 80 spaces located here this translates to 32 vehicles arriving during the morning peak hour and approximately 13 vehicles during the peak 15 minute period. [This is not apparently consistent with the vehicular analysis which calls for 54 vehicle trips inbound during the peak hour. The difference is that the 54 vehicles includes those parking elsewhere. These trips are assumed to approach the site for projection purposes but will actually park nearby.]

It is expected that a round trip on the elevator will take approximately 90 seconds to drive a vehicle onto the elevator, bring it down the one or two stories, park the vehicle, and then have the attendant return to the street level for the next vehicle. This assumes that the vehicle is parked close to the elevator on the parking level. Given this 90 second trip, ten vehicles could be accommodated for a 15 minute period with a single elevator and a single attendant.

This 90 seconds could be reduced even further by parking all peak arrivals on the basement level rather than the sub-basement level reducing elevator travel time. With a capacity of ten vehicles per 15 minutes and 12 or 13 expected to arrive during any 15 minute period, a small queue of several vehicles could occur during the peak 15 minute period during the day.

Assuming a peak hour demand of 32 vehicles, the 90 second time can accommodate 40 vehicles. Again, this assumes a single attendant with a single elevator. The several vehicle queue that may develop can easily be contained within the loading area for the building which will not be used during the morning peak hour for loading purposes. This will be consistent with the "no delivery during peak hours" policy of the City.

The 90 second per vehicle capacity of the parking service

on-site will be able to accommodate the 32 vehicles expected during morning peak hour with a single elevator. In fact, there are two elevators proposed. The second elevator is included to allow for maintenance and potential breakdown. If queuing should become a problem, the second elevator could be used. This would double the parking operations capacity to 20 vehicles per 15 minutes and easily accommodate the peak demand time each morning. It is unlikely that this will be necessary given the arrival pattern for downtown parking facilities and the available queuing area on-site.

6.8 Transportation Mitigation Measures

In general, this project does not represent a large project for the downtown Boston area. Because of the small size of the project, the impacts outlined in previous sections do not represent considerable detrimental impacts on roadways, transit systems, or pedestrian and parking access in the downtown area. Wherever reasonable, however, the proponent wishes to work with the City to minimize the project's impacts.

6.8.1 Vehicular Impacts

The impacts on the intersections in the vicinity of the site related to the vehicular trips during the peak hour are not considerable. The opportunity to make significant improvements at any of these intersections is limited, particularly considering that the right-of-ways must serve both vehicular and pedestrian traffic. Insofar as mitigating the impacts on the downtown study area traffic is concerned, the most productive mitigation would be measures that increase transit and walking trips to and from the site, thereby minimizing the number of vehicle trips in the study area and the downtown area as a whole. In light of this, no specific roadway improvements are recommended for this project.

The intersection of Bosworth Street and Tremont Street presently is an unsignalized intersection, since Bosworth Street is generally a "driveway" for this and adjacent properties along it. It is proposed that the intersection remain as such with possible reinforcement of the nature of Bosworth Street via the installation of a "STOP" sign control at Tremont Street. The volumes in and out of Bosworth Street will not constitute any kind of LOS problem.

6.8.2 Pedestrian Impacts

In terms of pedestrian access to and from the site, the increase in pedestrians related to the project is not great considering the large number of pedestrian presently using this corridor between Government Center and the Common. The

proponent is willing to work with the City, as necessary, to minimize sidewalk clutter along the site for both the Tremont Street and Bosworth Street frontages. In fact, Bosworth Street will be enhanced to encourage pedestrian flows along it and up and down the Province House Steps. It has become a priority to improve the downtown pedestrian pathways, of which this is a relatively unique part. There will be some pedestrian access along Bosworth Street which will make this route more desirable from the direction of Downtown Crossing.

6.8.3 Transit Impacts

Site-related transit use will not considerably impact the MBTA system nor any of the specific stations within the vicinity of the site. The convenience of four transit nodes so close to the project makes transit use a desirable alternative, particularly given the access constraints for automobiles. This area of the City is ideally suited for transit use, since at least two transit lines are available at each of the four nearby MBTA stations with the nearest, Park Street, having access to both the Green and Red Lines, which are directly linked to North and South Stations, respectively, where commuter rail is available.

The site's location within the core of the MBTA rail system will be a major factor in attracting tenants for the project. The tenants will be strongly encouraged to subsidize the public transportation cost of employees. In addition to this, "T" passes and schedules will be available on site as well as promoted in the advertising and marketing for the space. Ridesharing will also be encouraged. The proponent will include promotion of ridesharing agencies in its marketing of the office space and will preserve an appropriate number of spaces within the on-site parking facility to accommodate van-pools or other car-pools. This is a measure that has been incorporated into several other downtown area projects.

6.8.4 Parking Impacts

The most critical element of the project impacts appears to be the deficit of 78 spaces for parkers in the vicinity of the site. The 80 spaces available on-site will likely be for tenants only and rented on a monthly basis with none available for short-term parking. As mentioned earlier, the garages in this vicinity of the downtown appear to have reached an equilibrium between all day and short-term parking demand through either allocation of spaces or pricing. It is likely that this could be adjusted given the increase in demand of parking in the area related to this and other development. Under this situation, it is likely that commuters to the downtown area will either pay a higher price in the future (as demand arises) or find alternative

routes to work either by bus or transit rail lines. With the increases in capacity along the MBTA system discussed above, as well as the difficulty in accessing the downtown area expected during the construction of the new Central Artery project, it is likely that transit usage will be the choice of many more than the 30 percent of the employees presently projected. This will undoubtedly ease the demand on the parking in the area.

6.8.5 Peak Hour Impacts

One of the measures to minimize peak demands on roadways and transit systems is to advocate flexible hours so that employees can "avoid" the worst commuting times and still work their full schedule. Flexible work schedules are beneficial to employees and employers and serve to speed the peak loads on transportation facilities in the area.

In addition, deliveries to the site will be scheduled so as not to coincide with peak periods along Tremont Street for either vehicles or pedestrians. These deliveries would be scheduled for the evening or weekends when possible.

6.8.5 Construction Impacts

During construction of the Tremont Temple/90 Tremont Street project, parking will not be made available to the construction workers at the site. Only construction vehicles or equipment necessary for the performance of the work will be allowed on the site. It is anticipated that space to store equipment on site will be provided to make it easier to arrive at the site by public transportation.

Best efforts will be maintained to minimize construction related truck movement between 7:30 AM to 9:00 AM and between 4:00 PM to 6:00 PM. When this becomes less feasible during demolition, excavation, and concrete placement, staging areas will be established off site with trucks and materials being dispatched by radios to minimize idling near the site. The provision of appropriate staging will be made a part of the subcontractor's agreements.

It is anticipated that traffic to and from the site will be restricted to Tremont Street, Bosworth Street to and from Tremont Street, and will follow the existing one way street patterns approaching Tremont Street, from Cambridge Street, Bowdoin Square and possibly Court Street. Trucks will proceed down Tremont Street to Stuart Street and Kneeland Street to access the Central Artery and the Massachusetts Turnpike. Specific truck routes will be determined with the Boston Transportation Department. The entrance and exit gate for construction truck traffic will be on Bosworth Street. It is anticipated that the largest volume of truck traffic will occur during the excavation phase of the

project with volumes varying from approximately 60 to 70 truck trips per day over a four month period. As described earlier, during excavation, staging areas will be established off-site with trucks being dispatched by radios to minimize idling near the site.

Access for business vehicles, public safety vehicles and pedestrians will be maintained on Bosworth Street. If vehicular access is unavoidably disrupted, 48 hours prior notice will be given to abutters and the proper local authorities.

A final Construction Management Plan (Traffic Management Plan) will be submitted to the Boston Transportation Department (BTD) for approval prior to the actual start of construction. The plan will be in compliance with the Boston Transportation Department & Construction Management Program and the Draft Project Impact Report. The designated contractor of the Applicant will be bound by the agreement.

6.8.6 Transportation Management

The proponent will coordinate with other local projects such as 73 Tremont Street and 45 Province Street to coordinate transportation and trip reduction efforts. In particular, because of the construction schedules of the projects, the construction planning must be coordinated so that any activity along roadways or sidewalks does not coincide. Although the project is not large enough to warrant a full-time Transportation Coordinator on-site, the proponent will appoint a staff person from building management to handle the responsibilities of monitoring and managing the above referenced programs as they relate to this project. This person will be the City's contact person with building management and will have the authority to resolve transportation issues on a timely basis.

The following sections present the findings from analyses performed by project consultants including HMM Associates, Inc., McPhail Associates, Inc., Cermak Peterka Peterson, Inc., Abend Associates and Morse Diesel, Inc. In the wind, shadow, daylight, air quality, geotechnical and groundwater, noise, construction impacts, solid and hazardous waste, and rodent control studies, the proposed Tremont Temple/90 Tremont Street project was analyzed in conjunction with the Substantial Accord and/or the As-of-Right scenarios in accordance with the requirements of the scoping determination. The following sections will show that in all environmental categories, it is evident that given the minor differences in project size and height of the three scenarios, the differences in environmental effects from the proposed project versus both the As-of-Right and Substantial Accord schemes are minimal.

7.1 Wind Analysis

7.1.1 The Development

The proposed Tremont Temple/90 Tremont Street project is located on Tremont Street at its intersection with Bosworth Street. The Proposed Project (Configuration A) is approximately 210 feet, 6 inches to the top of the mechanical penthouse and is situated among buildings of roughly similar height. An As-of-Right scheme (Configuration B), three stories shorter than the Proposed Project, has also been studied. A Substantial Accord scheme was not specifically studied, but falls between the As-of-Right scenario and the Proposed Project. A 510-foot building is located approximately 250 feet to the north at Tremont and Beacon Streets. The Boston Common is located two blocks to the southwest and the Old Granary Burying Ground is southwest of the site across Tremont Street.

The position of the proposed Tremont Temple/90 Tremont Street in a historic area, its increased height over the pre-existing site, its prominent location near the Boston Common (where winds may be higher than in built-up city areas) and the Old Granary Burying Ground, and its dominance of adjacent streets and nearby intersections, indicate the need to assess its impact on pedestrian wind comfort.

7.1.2 The Wind Studies

Cermak Peterka Petersen, Inc. was retained to study the potential pedestrian level wind impacts, using wind-tunnel testing, associated with the development of the proposed Tremont Temple/90 Tremont Street project. The wind-tunnel study involved flow visualization testing to qualitatively assess wind impacts.

The study had several objectives:

- o Provide general conclusions on the nature of the wind environment in the project site area;
- o Describe, qualitatively, the nature and locations of project-related changes in the wind environment; and
- o Test qualitatively the relative difference in wind environment associated with the Proposed Project.

The objectives were accomplished through "smoke test" observations of flow patterns in the wind tunnel for a variety of wind directions.

7.1.3 Urban Wind Characteristics

The winds blowing over a city are slowed and mixed by interaction with trees, buildings, and other features which contribute to "surface roughness." The result of this interaction is that the average wind speed increases with elevation above the local terrain up to a level called the gradient height (usually 900 to 1,350 feet). Above this level, the wind speed is known to be relatively constant and unaffected by the surface development. The region where the surface roughness affects the wind characteristics is known as the atmospheric boundary layer.

High winds at ground level around tall buildings result from the interaction between buildings and higher-speed winds that exist at greater heights. The pressure exerted on the windward face of a building increases with wind velocity. Thus the pressures will be greater near the top than near the bottom of the building. As a result of this vertical pressure gradient, high level winds are deflected down the building face from the high pressure to the lower pressure region. Winds flowing down the windward face hit the ground and are accelerated around the windward corners by low pressures existing on the sides of the building. High wind speeds at ground level are most pronounced near tall buildings which are surrounded by structures whose heights are low in comparison to the tall building. However, even buildings within an environment of other buildings of similar height may also deflect higher wind speeds to ground level. At ground level, the highest winds are often found around building corners. This corner flow is usually a relatively steady high-speed wind that changes to a lower speed, but gusty wind as it moves farther from the building. The presence of other nearby buildings can also redirect winds and cause additional increases in wind speed due to funneling or channeling.

For Tremont Temple/90 Tremont Street, its projection above the level of surrounding buildings and its street corner

location provides the opportunity for winds to be deflected down toward street level. Further, at some locations these winds may be deflected into adjacent street canyons. Both of these effects could potentially increase wind speeds along the sidewalks around the building.

7.1.4 Boston Wind Climate

Winds which affect Boston are influenced by both coastal effects and the general west to east pattern of global circulation. A brief discussion of some of these effects is presented in Appendix B-2. The probability of winds blowing with certain magnitude from various directions is shown in Figure 7.1-1A while the likelihood of winds approaching from any one direction is shown in Figure 7.1-1B. The data are from an anemometer 22 feet above ground at Logan International Airport.

Winds are stronger during the winter (December-February) and spring (March-May) than for summer (June-August) or fall (September-November). Westerly winds predominate, particularly during the winter when 52 percent of the time winds come from the quadrant WSW to NW and only 10 percent from the easterly quadrant ENE to SE. The strongest winds also originate from the west in winter.

During the summer, the directions for winds are somewhat more evenly divided with 34 percent from the WSW to NW quadrant and 24 percent from the ENE to SE quadrant. The division of strong winds between east and west is also more evenly divided during summer than in winter. On the whole, winds are generally weaker in summer than in winter.

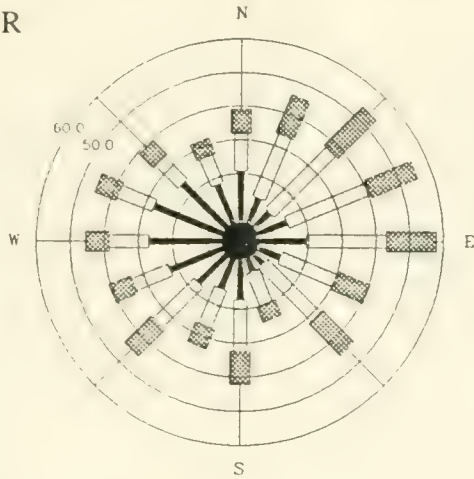
Spring and fall are transitions between winter and summer and thus are a mixture of the two seasons. In fall, September and October are more like summer in character, but a little stronger in wind speeds. November is much like winter in its wind distribution, but with slightly less wind magnitude. In spring, March is much like winter while April winds are like winter in distribution of directions, but lower in speed. May is more like summer in direction distribution and wind magnitude.

7.1.5 Flow Visualization Testing Study Approach

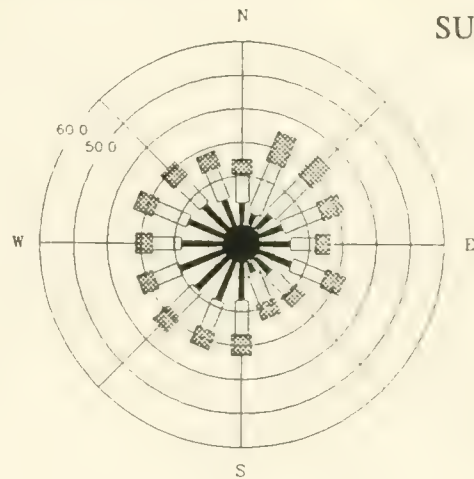
Pedestrian level winds were studied in an atmospheric boundary layer wind tunnel utilizing flow visualization techniques with a smoke tracer of titanium dioxide (TiO_2). The flow visualization methodology involved observing wind flow patterns at ground level in the study area with a smoke probe. The laboratory and wind tunnel are shown in Figure 7.1-2. A model of the proposed site and surroundings was developed at a scale of 1:350 and extends beyond Chauncy and Arch Streets to the east of the site and beyond the State

WIND SPEED PROBABILITY BY DIRECTION

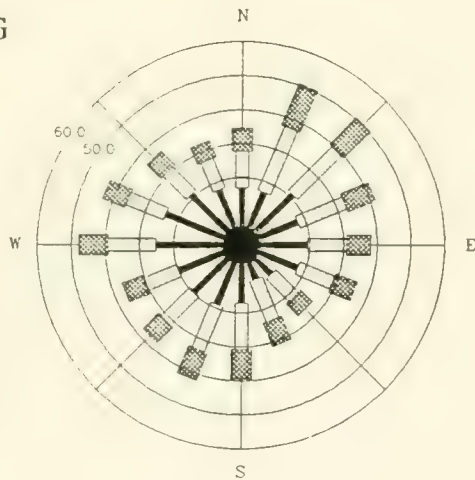
WINTER



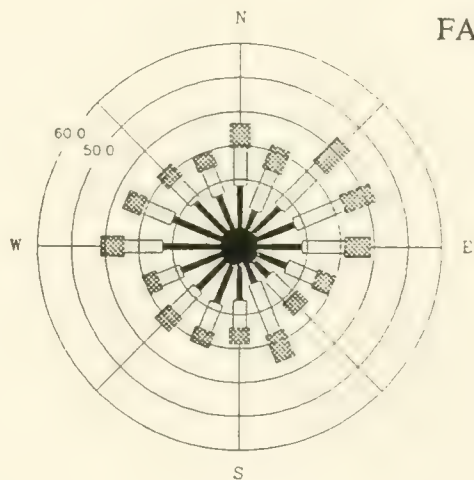
SUMMER



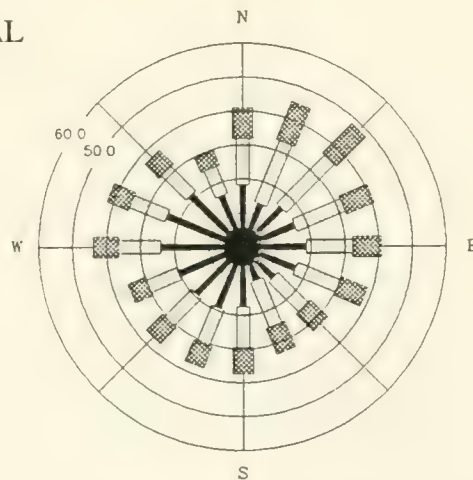
SPRING



FALL



ANNUAL



10E-2

10E-4

10E-6

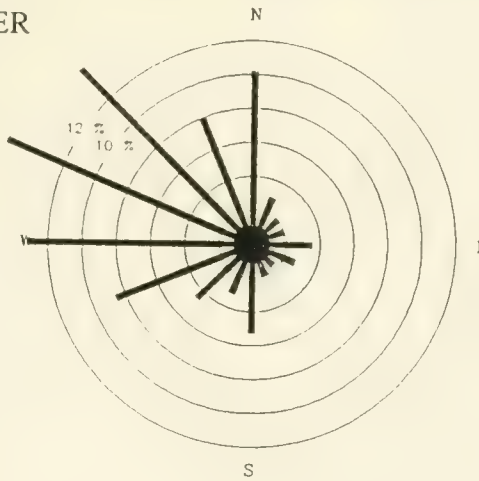
10 mph / Division



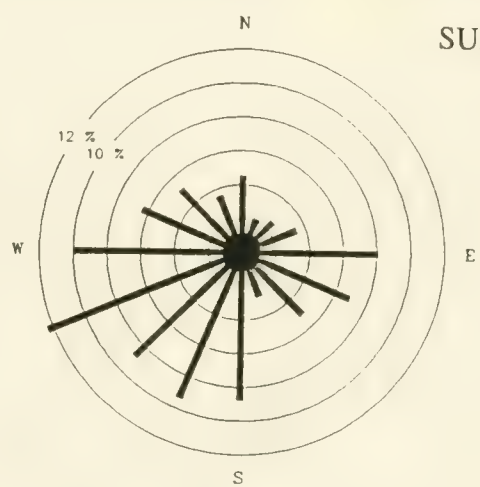
FIGURE 7.1-1A
SEASONAL AND ANNUAL WIND SPEED AND DIRECTION
PROBABILITIES FOR BOSTON

WIND FREQUENCY BY DIRECTION

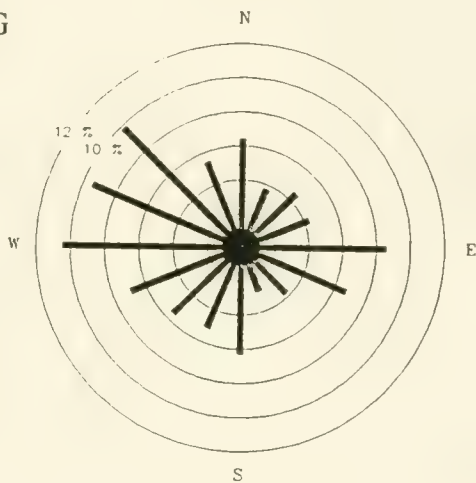
WINTER



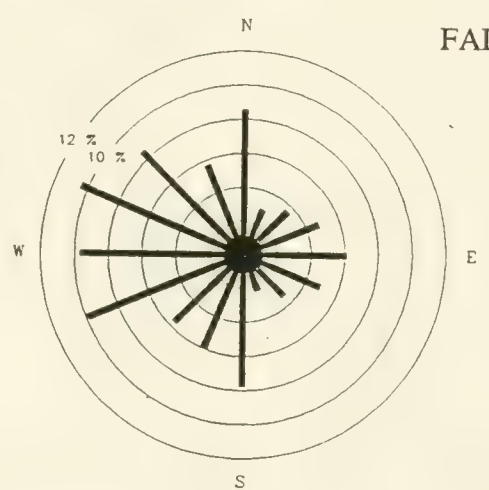
SUMMER



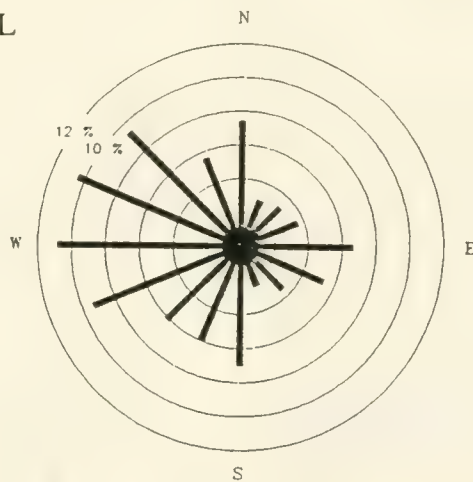
SPRING



FALL



ANNUAL

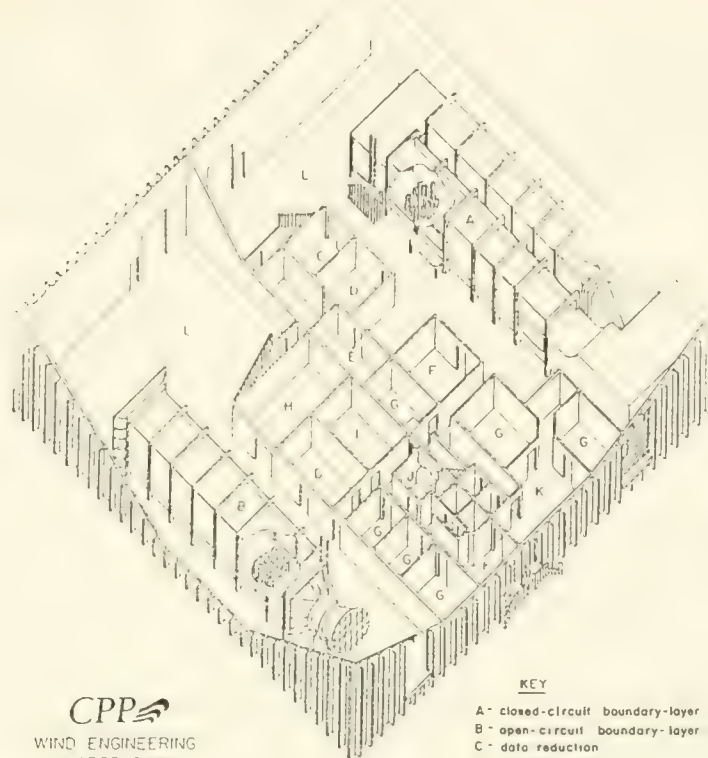


time

2% / Division



FIGURE 7.1-1B
SEASONAL AND ANNUAL WIND SPEED AND DIRECTION
PROBABILITIES FOR BOSTON

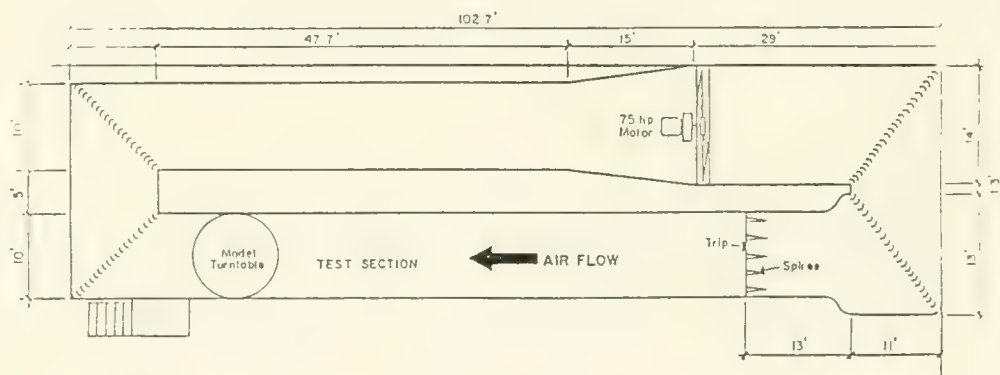


CPP
WIND ENGINEERING
LABORATORY

KEY

- A - closed-circuit boundary-layer wind tunnel
- B - open-circuit boundary-layer wind tunnel
- C - data reduction
- D - computer room
- E - instrumentation room
- F - model technicians
- G - office
- H - machine shop
- I - conference room
- J - lounge
- K - reception area
- L - work area

Plan View



Elevation View

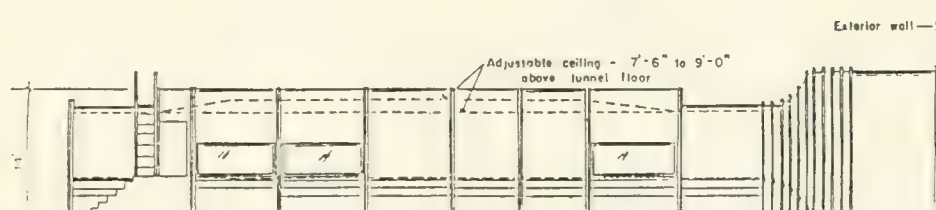


FIGURE 7.1-2

WIND-ENGINEERING LABORATORY/CLOSED-CIRCUIT
BOUNDARY LAYER WIND TUNNEL

House and Cambridge Street to the west of the site. The model covers the area within a radial distance of 1,600 feet from the site. In addition, upwind buildings taller than 25 stories and within 2,400 feet of the project site were included during testing such as Boston Crossing and Figure 7.1-3 provides a plan view of the project and surroundings. A list of references for engineering testing techniques are also included in Appendix B-1.

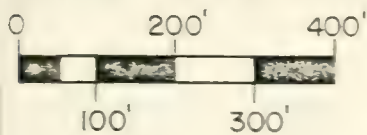
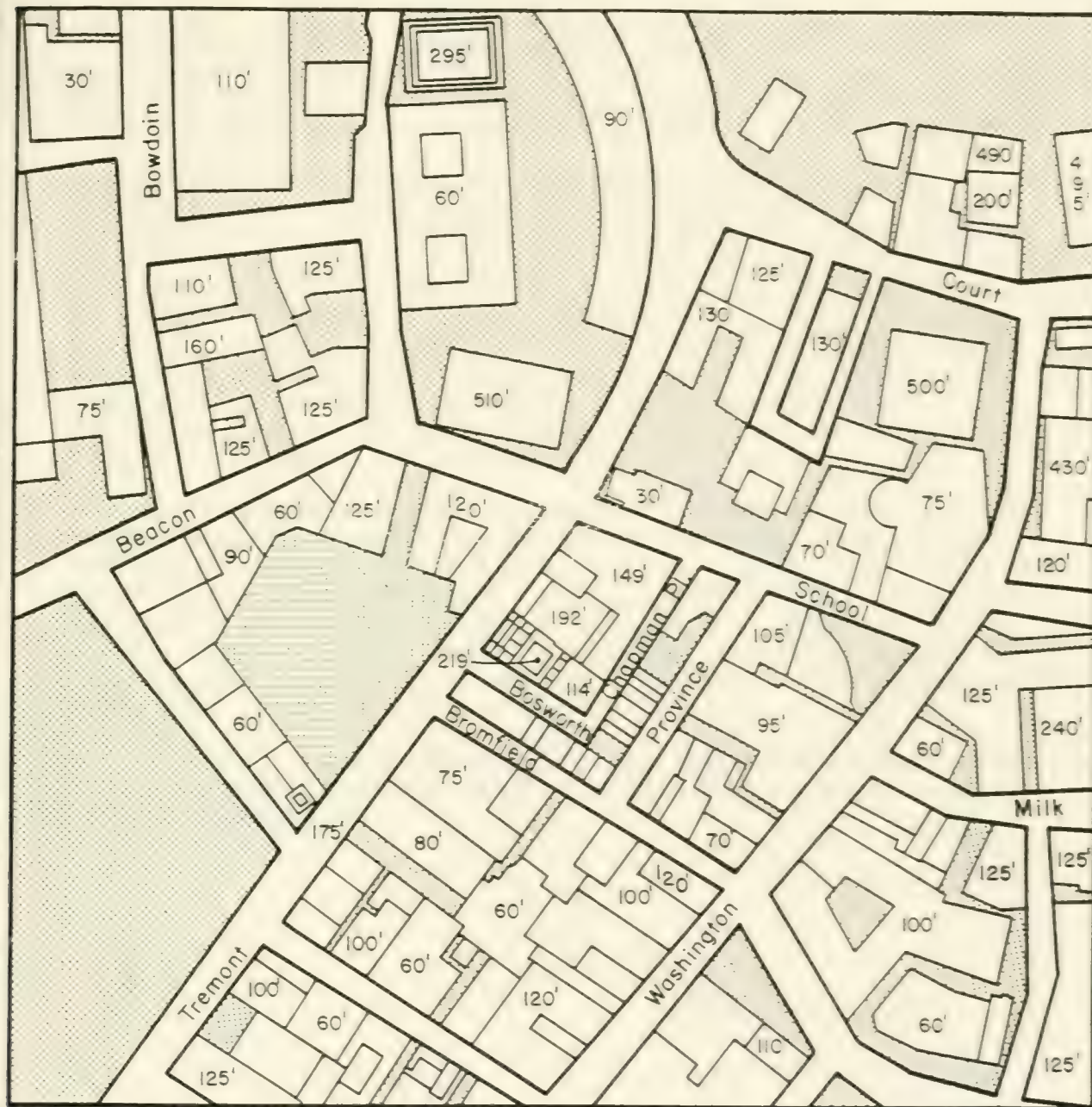
Vertical wind speed profiles were developed to simulate actual wind conditions in the project area. A mean velocity distribution following a power-law variation with height, of 0.23, was used. The wind tunnel provides the capability of rotating the model so that pedestrian level winds can be simulated and examined at different wind directions.

By performing the wind analysis with smoke at a number of wind directions, "hot spots" of high velocities may be identified. An experienced practitioner can quickly cover a wide area, identifying hot spots and recording wind speed levels. A written record of the flow visualization identifies specific locations which could be investigated in more detail in a quantitative study (if the smoke study demonstrates the need for further quantitative analysis).

Examination of pedestrian winds should not concentrate only on high velocity "hot spots." Areas where low velocities are changed to moderate velocities for a number of wind directions may represent a deterioration in pedestrian environment. Also, high pedestrian traffic areas should be addressed even if "hot spots" are not evident, as modest changes in environment may change pedestrian traffic patterns. This is particularly true for pedestrian areas which are designed for long-duration activities.

In addition to defining wind speeds at ground level, smoke visualization provides an understanding of why a particular flow speed exists by examining the flow conditions upwind and above the surface. For example, high wind velocities at the corner of a building may be seen to be the result of wind flow down the windward face of the building causing wind to "converge" toward the surface at the corner.

Using this technique, a qualitative evaluation of local wind speed was obtained by classifying wind speeds into categories of high, moderate, low, and stagnant in each of a number of areas. A moderate wind speed is best representative of the velocity in an open area away from significant influence of structures. High wind speed is a velocity significantly faster than "moderate." High wind speeds are usually observed at isolated spots rather than in large areas, although, high wind areas of significant size may exist among tall buildings. For this study, any high velocity "hot spot" in an area would result in classifying



CONFIGURATION A

Tremont & Temple 90 Tremont Street in, at heights shown *

CONFIGURATION B

Tremont & Temple 90 Tremont Street in, with three floors removed

* This height is to the top of the decorative elements on the roof

FIGURE 7.1-3

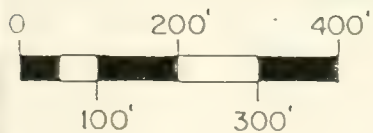
BUILDING LOCATION AND SURROUNDINGS

the entire area as high velocity. Low velocity is lower than moderate wind speed, but not stagnant. Stagnant indicates very little or no air motion in an area. Where an area was classified as high, maps were also marked with the location of the high velocity "hot spots" within the area.

Approximate wind ranges may be assigned to the high, moderate, low, and stagnant qualitative regimes. These speed ranges are a function of wind direction and thus, should not be used in any calculation procedure to estimate compliance with the BRA's 31 mph effective gust guideline. In terms of effective peak gust defined as mean plus 1.5 root-mean-square velocities occurring one percent of the time (the BRA effective peak gust), the high category is roughly velocity greater than 28 mph, moderate is approximately 22 to 32 mph, low is about 10 to 25 mph, and stagnant is less than 15 mph.

For the proposed Tremont Temple/90 Tremont Street project, smoke tests were made for 23 specific study areas. These are shown in Figure 7.1-4. Each area was examined with the smoke tracer for the eight compass points. For each wind direction, the velocity in each different area was rated in one of the four wind speed categories described above and high-velocity areas were recorded on maps. The results are presented in Table 7.1-1 and Figure 7.1-5.

A videotape of selected portions of the flow visualization test was made as a record of the qualitative study and can be made available.



Illustrating Zone Numbers & Boundaries



AREAS SELECTED FOR QUALITATIVE INVESTIGATION

TABLE 7.1-1 (Continued)

Number of Wind Directions with Specified Wind Speed

<u>Zone #</u>	<u>Configuration</u>	<u>WIND SPEED</u>			
		<u>High</u>	<u>Moderate</u>	<u>Low</u>	<u>Stagnant</u>
5	A	1 NW	3 N,E,SW	4 NE,SE, S,W	
	B	1 NW	3 N,E,SW	4 NE,SE, S,W	
	C	1 NW	3 N,E,S	4 NE,SE, S,W	
6	A	1 W	3 S,SW,NW	3 N,E,SE	1 NE
	B	1 W	3 S,SW,NW	3 N,E,SE	1 NE
	C	1 W	4 N,S,SW,NW	2 E,SE	1 NE
7	A		3 SE,SW,W	5 N,NE,E, S,NW	
	B		3 SE,SW,W	5 N,NE,E, S,NW	
	C		3 SE,SW,W	5 N,NE,E, S,NW	
8	A	1 SE	2 N,E	5 NE,S,SW, W,NW	
	B	1 SE	2 N,E	5 NE,S,SW, W,NW	
	C	1 SE	2 N,E	5 NE,S,SW, W,NW	

- Continued -

TABLE 7.1-1 (Continued)

Number of Wind Directions with Specified Wind Speed

<u>Zone #</u>	<u>Configuration</u>	<u>WIND SPEED</u>			
		<u>High</u>	<u>Moderate</u>	<u>Low</u>	<u>Stagnant</u>
9 A			4 N, NE, E, NW	4 SE, S, SW, W	
B			4 N, NE, E, NW	4 SE, S, SW, W	
C			4 N, NE, E, NW	4 SE, S, SW, W	
10 A		6 NE, E, SE, SW, W, NW	1 N	1 S	
B		6 NE, E, SE, SW, W, NW	1 N	1 S	
C		6 NE, E, SE, SW, W, NW	1 N	1 S	
11 A		7 N, NE, E, S, SW, W, NW	1 SE		
B		7 N, NE, E, S, SW, W, NW	1 SE		
C		7 N, NE, E, S, SW, W, NW	1 SE		
12 A		5 N, E, SW, W, NW	2 NE, S	1 SE	
B		5 N, E, SW, W, NW	2 NE, S	1 SE	
C		5 N, E, SW, W, NW	2 NE, S	1 SE	

- Continued -

TABLE 7.1-1 (Continued)

Number of Wind Directions with Specified Wind Speed

<u>Zone #</u>	<u>Configuration</u>	<u>WIND SPEED</u>			
		<u>High</u>	<u>Moderate</u>	<u>Low</u>	<u>Stagnant</u>
13 A		4 N,S, W,NW	1 SW	2 NE,SE	1 E
B		4 N,S, W,NW	1 SW	2 NE,SE	1 E
C		4 N,S, W,NW	1 SW	2 NE,SE	1 E
14 A		5 N,NE,E, 3 SE,S,W SW,NW			
B		5 N,NE,E, 3 SE,S,W SW,NW			
C		5 N,NE,E, 3 SE,S,W SW,NW			
15 A		7 N,NE,E, 1 W SE,S,SW, NW			
B		7 N,NE,E, 1 W SE,S,SW, NW			
C		7 N,NE,E, 1 W SE,S,SW, NW			

- Continued -

TABLE 7.1-1 (Continued)

Number of Wind Directions with Specified Wind Speed

<u>Zone #</u>	<u>Configuration</u>	<u>WIND SPEED</u>			
		<u>High</u>	<u>Moderate</u>	<u>Low</u>	<u>Stagnant</u>
16 A		6 N,NE, SE,S, SW,W	2 E,NW		
B		6 N,NE, SE,S, SW,W	2 E,NW		
C		6 N,NE, SE,S, SW,W	2 E,NW		
17 A		2 SW,W	6 N,NE,E, SE,S,NW		
B		2 SW,W	6 N,NE,E, SE,S,NW		
C		2 SW,W	6 N,NE,E, SE,S,NW		
18 A		3 SE,W, NW	5 N,NE,E, S,SW		
B		3 SE,W, NW	5 N,NE,E, S,SW		
C		3 SE,W, NW	5 N,NE,E, S,SW		

- Continued -

TABLE 7.1-1 (Continued)

Number of Wind Directions with Specified Wind Speed

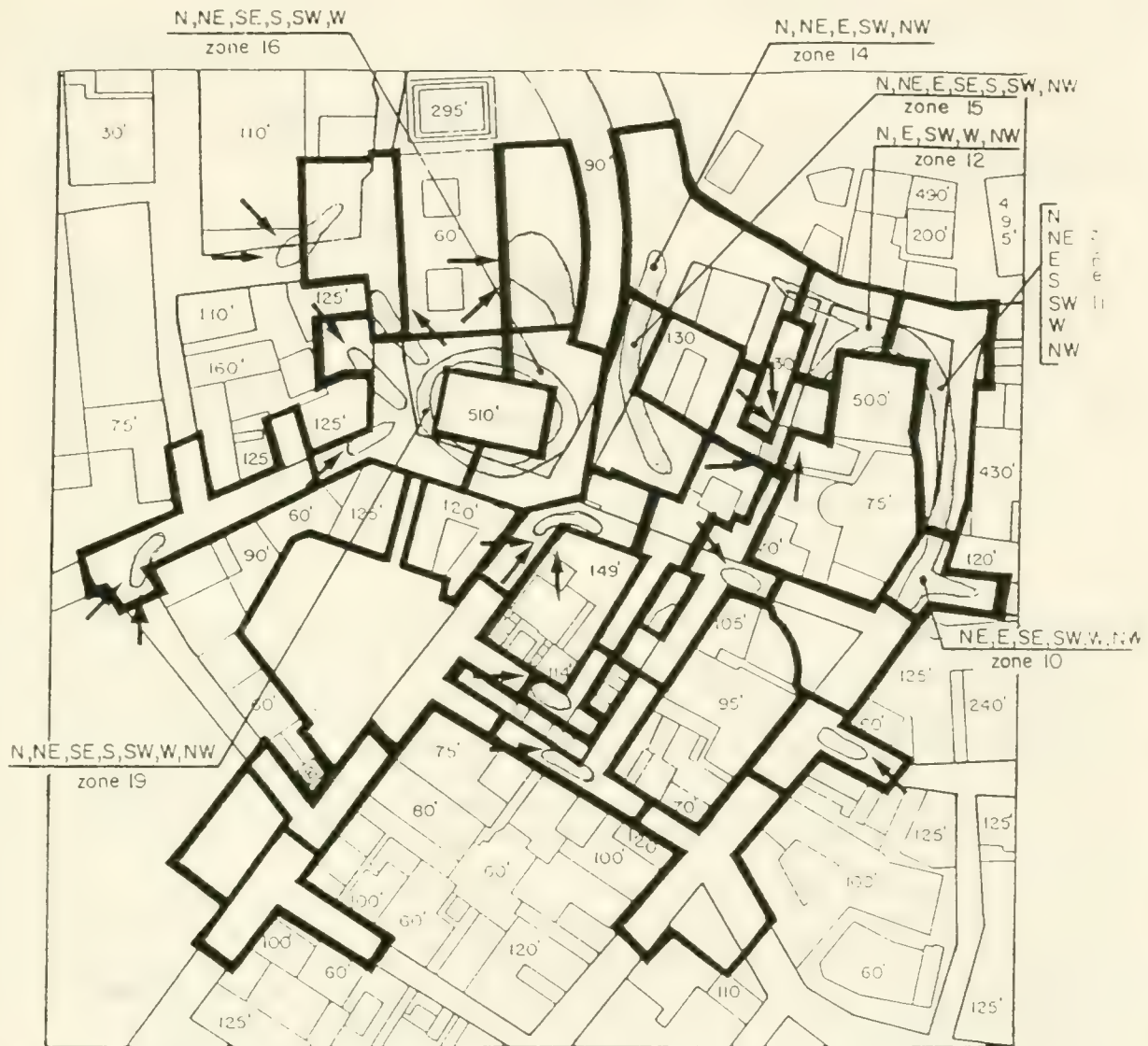
<u>Zone #</u>	<u>Configuration</u>	<u>WIND SPEED</u>			
		<u>High</u>	<u>Moderate</u>	<u>Low</u>	<u>Stagnant</u>
19 A		7 N,NE, SE,S,SW, W,NW	1 E		
B		7 N,NE, SE,S,SW, W,NW	1 E		
C		7 N,NE, SE,S,SW, W,NW	1 E		
20 A		2 S,SW	6 N,NE,E, SW,NW		
B		2 S,SW	6 N,NE,E, SE,W,NW		
C		2 S,SW	6 N,NE,E, SE,W,NW		
21 A		4 S,SW,W	2 NE,E,NW	2N,SE	
B		4 S,SW,W	2 NE,E,NW	2N,SE	
C		4 S,SW,W	2 NE,E,NW	2N,SE	
22 A		2 W,NW	4 N,SE,S,SW	2 NE,E	
B		2 W,NW	4 N,SE,S,SW	2 NE,E	
C		2 W,NW	4 N,SE,S,SW	2 NE,E	

- Continued -

TABLE 7.1-1 (Continued)

Number of Wind Directions with Specified Wind Speed

<u>Zone #</u>	<u>Configuration</u>	<u>WIND SPEED</u>			
		<u>High</u>	<u>Moderate</u>	<u>Low</u>	<u>Stagnant</u>
23 A			6 N,SE,S, SW,W,NW	2 NE,E	
B			6 N,SE,S, SW,W,NW	2 NE,E	
C			6 N,SE,S, SW,W,NW	2 NE,E	



Note. High wind areas apply to all configurations except that high wind area in zone 3 does not occur in Configuration C.

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FIGURE 7.1-5

HIGHWIND SPEED AREAS AND ASSOCIATED WIND DIRECTIONS
FOR THE BUILD AND NO-BUILD ALTERNATIVES

7.1.6 Results and Discussion of the Qualitative Analysis

The flow visualization study examined pedestrian level winds as described in the previous section. The following three configurations were studied:

- o Configuration A - Proposed Project
- o Configuration B - As-of-Right Scheme (Three stories shorter than Proposed Project)
- o Configuration C - No-Build

Table 7.1-1 shows the number of wind directions with high, moderate, low or stagnant winds for each of the 23 zones shown in Figure 7.1-5. Data for both the two Build configurations (A and B) and the No-Build configuration (C) are listed. The Table shows that high winds were noted in 17 zones under the No-Build configuration and 18 zones under the Build configurations. No qualitative difference in smoke flow characteristics was observed between the two Build cases, and they are discussed below without differentiation.

Since the time of actual qualitative wind tunnel testing, a second alternative eliminating two stories from the Full Build configuration, was also proposed for consideration. The two-story reduction is referred to as the Substantial Accord scheme. Based on the similarity of results obtained for the Proposed Project (A) and As-of-Right (B) configurations, the same conclusions are drawn with consideration of the Substantial Accord configuration.

The actual areas where high winds occurred are shown in Figure 7.1-5 for all three configurations. Because differences in high speed zones between configurations was limited to only one "hot spot" (Zone 3 - the area around the intersection of Chapman and Bosworth Streets), data for all three configurations were presented on one figure. Arrows or labels show the wind directions for which the high wind areas were observed. The results in Table 7.1-1 and Figure 7.1-5 show that differences between the No-Build and Build cases were primarily limited to the streets immediately around the project site.

Past experience with building influences on pedestrian winds demonstrated that areas 1 through 6 would be the ones most likely influenced by the presence of the proposed Tremont Temple/90 Tremont Street project sufficiently to be detected by the qualitative evaluation. As shown by Table 7.1-1, only zones 1, 2, 3 and 6 indicated changes in wind speed category from No-Build to the Build configurations.

In area 1, high velocities were observed for southerly through westerly winds for all three configurations. The

high wind area is likely due mainly to the 120- and 150-foot buildings on the southwest and southeast corners. While the qualitative evaluation showed no difference in high winds with the proposed Tremont Temple/90 Tremont Street project in place, it is likely that some small quantitative changes do occur, although the sign of the change cannot be predicted from smoke tests. Importantly, the Proposed Project caused winds for two directions to decrease by one category from moderate to low. This decrease is due to the new building blocking or restricting flow in that area.

In area 2, presence of the new building caused a decrease in wind speeds by one category (moderate to low) for three wind directions: north, northeast and east. This decrease is due to blocking of the wind by the structure. It is somewhat surprising that no increases were noted for the build environment, given the presence of the building on a street corner. Some quantitative increases are likely to have occurred within the qualitative wind speed range. A significantly taller building would probably have shown qualitative increases.

Area 3 is the only zone where higher velocity winds appeared as a result of adding the proposed Tremont Temple/90 Tremont Street building. The higher velocity winds are due to the downward deflection of west winds by the new project. While the "high" winds in this area are not visibly as strong as some other high wind areas, a definite increase from moderate to high did occur for west winds. In addition, a change from low to moderate for three wind directions (south, southwest and northwest) and from moderate to low for one wind direction (southeast) occurred. The net impact in area 3 of the proposed Tremont Temple/90 Tremont Street is likely some increase in overall perceived wind speed.

Areas 4 and 5 had no increases or decreases in observed speed categories. The only high speed region in these two areas occurred for a northwest wind which would not be expected to change significantly due to the proposed Tremont Temple/90 Tremont Street building.

Wind speeds in area 6 changed only for north winds where a moderate speed rating under the No-Build configuration improved to a slow category with the project. This is attributable to the blocking of the winds by the new building. The "hot spot" in zone 6 was caused by west winds and is sufficiently far from the project site to avoid significant influence of the proposed Tremont Temple/90 Tremont Street project. It is possible that small quantitative differences in wind speeds may occur in this area for the build configurations.

Other areas (Zones 7 through 23) were sufficiently far from the project site or dominated by another tall building, that

no qualitative changes were observed. A number of these areas had hot spots due to the deflection of winds at higher elevations down to ground level by adjacent or nearby tall buildings or due to the channeling of winds between buildings. At study location 16, it is possible that small quantitative changes may occur in the southeast portion of this zone due to the build configurations. Such changes, however, were not observed due to the more dominant 510-foot, One Beacon Street, building to the north of the project site.

Overall, it appears that the presence of Tremont Temple/90 Tremont Street will increase pedestrian wind speeds somewhat, primarily in area 3. Except for areas 1, 2, 3 and 6 near the building base, the project did not appear to have a significant impact on wind speeds. Increases in velocity on the streets near the project site (in Zones 1, 2, 3 and 6) appeared to be limited to one or two wind directions. Some changes were observed to occur for relatively frequent west winds. All zones away from the building showed no change in wind speed categories. The addition of proposed projects such as 40 Franklin Street and 45 Province Street are not expected to result in significant interaction between the Tremont Temple/90 Tremont Street project and the other proposed projects.

7.1.7 Summary

A qualitative wind-tunnel test was performed to evaluate the impact of the proposed Tremont Temple/90 Tremont Street project on pedestrian wind speeds within 1,600 feet of the site. A 1:350 scale model of the project and the surrounding city was installed in a boundary-layer wind tunnel capable of simulating atmospheric winds over the site. Flow visualization studies were conducted, using smoke to make the wind visible, to evaluate relative wind speeds, and to identify differences between Build and No-Build configurations. The flow visualization showed that building influence was confined to streets near the building. No qualitative difference in smoke flow characteristics was observed between the proposed Tremont Temple/90 Tremont Street project and the As-of-Right scheme.

7.2 Shadows

7.2.1 Introduction

A shadow analysis was undertaken to determine the extent of shadows generated by the Proposed Project as compared to shadows generated by an As-of-Right scenario, and by a scheme that is in Substantial Accord with As-of-Right height limitations. The shadow impact analysis indicates net new shadows as well as existing shadows to show clearly the incremental impact of the Tremont Temple/90 Tremont Street project.

7.2.2 Methodology

Consistent with the Scoping Determination, shadow conditions were analyzed for the hours 9:00 AM, 12:00 noon, and 3:00 PM for the vernal equinox, summer solstice, autumnal equinox, and winter solstice. The March 21 and September 23 shadows represent average shadow conditions; the June 22 shadows represent the minimum shadow conditions; and the December 21 shadows represent the maximum shadow conditions occurring in the area. As required for the autumnal equinox and vernal equinox, times have been adjusted to account for daylight savings time.

7.3.3 Analysis of Impacts

For each of the areas of concern as identified in the scope, any notable impacts are described regarding the Proposed Project, the 155-foot As-of-Right development scenario, and a scheme that is in Substantial Accord with As-of-Right height limitations. The Tremont Street area is a densely developed area with much of the open space shaded during various times of day and year. At the same time, several highly notable open spaces attract visual attention and pedestrian traffic. The scope identified areas of particular interest including Bosworth Street, the sidewalks along Tremont Street, the Granary and King's Chapel Burying Grounds, Old City Hall open space and the One Beacon Street plaza.

In the shadow diagrams, the lightest grey shade indicates shadows cast by the existing buildings in the area; the darker grey shade indicates net new shadows cast by the proposed project; a dotted black line indicates the boundary of shadows cast by the As-of-Right scenario; and a white line indicates the boundary of shadows cast by the Substantial Accord scheme. If the shadows cast by the Proposed Project do not extend beyond the shadows cast by the As-of-Right and Substantial Accord scenarios, only the darker grey shadow is shown. The shadow descriptions that follow highlight those situations in which any of the alternatives generate a shadow beyond that generated by

existing conditions.

Sidewalks on Tremont Street: The sidewalks on Tremont Street are impacted at five of the times studied.

At 12:00 noon on September 23, a small shadow impact results on the sidewalk at the corner of Beacon and Tremont Streets. Although the shadow is felt at the corner of 73 Tremont Street, neither the Substantial Accord nor the Proposed Project schemes impacts the area substantially more than the As-of-Right scenario.

At 9:00 AM on March 21 and on June 22, shadows resulting from the As-of-Right, Substantial Accord, and Proposed Project scenarios impact a small portion of the Tremont Street sidewalk. The shadows resulting from the Proposed Project are the same as those resulting from the other two schemes.

At 12:00 noon on June 22 and March 21 are the only times the Proposed Project results in greater shadow on Tremont Street than the As-of-Right and the Substantial Accord schemes. At 12:00 noon on June 22, however, the sidewalk is not impacted by this new shadow.

Granary Burying Ground: At three of the times studied, 9:00 AM on March 21, June 22 and September 23, shadows from each of the schemes impact a portion of the Granary Burying Ground not already impacted by existing shadows. In each case, the proposed scheme and the substantial accord scheme impact the area of concern only marginally more than the as-of-right scheme. In all cases, it should be remembered that trees populate the vast majority of the Burying Ground and substantially shade the site. Moreover, the existing two-story 90 Tremont Street building which is responsible for a gap in the existing shadows cast on the Granary by the Tremont Street streetwall, is an aberration in the streetscape. There is no additional shadow from the project at the other times studied.

One Beacon Street Plaza: At noon on both March 21 and December 22, additional shadows are created on the One Beacon Street plaza. In March, the shadow scarcely reaches the area of concern; however, in December, the small sliver of shadow is barely perceptible amidst the existing shadows. There is no additional shadow from the Proposed Project at the other times studied.

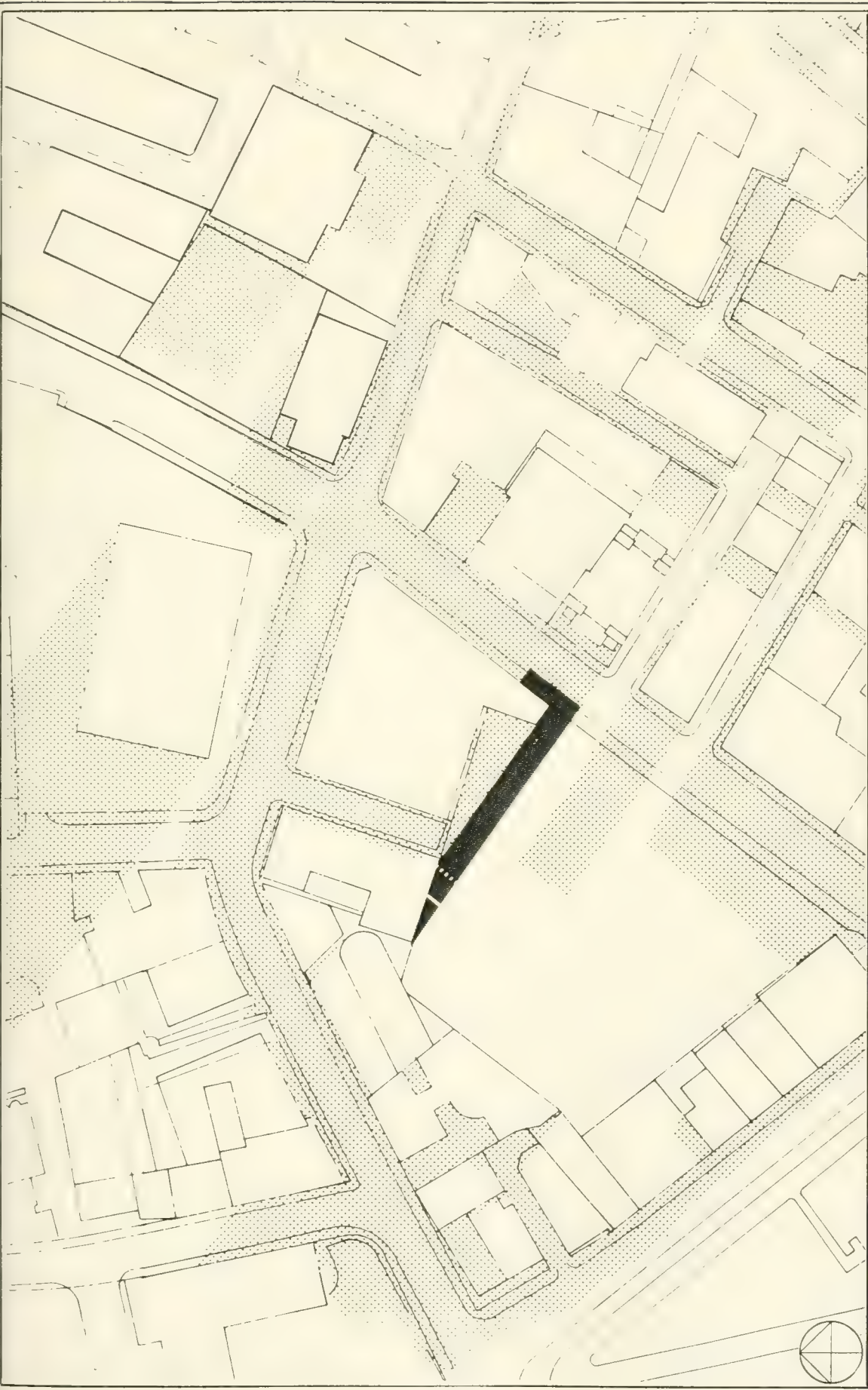
Other Areas of Concern: It should be noted that the shadows described above are the only net new shadows from the Tremont Temple/90 Tremont Street project that impact areas of concern, as identified in the Scoping Determination. The King's Chapel Burial Grounds, Bosworth Street, and the Old City Hall open space do not experience any new shadow impact

as a result of the Tremont Temple/90 Tremont Street project.

7.2.4 Summary

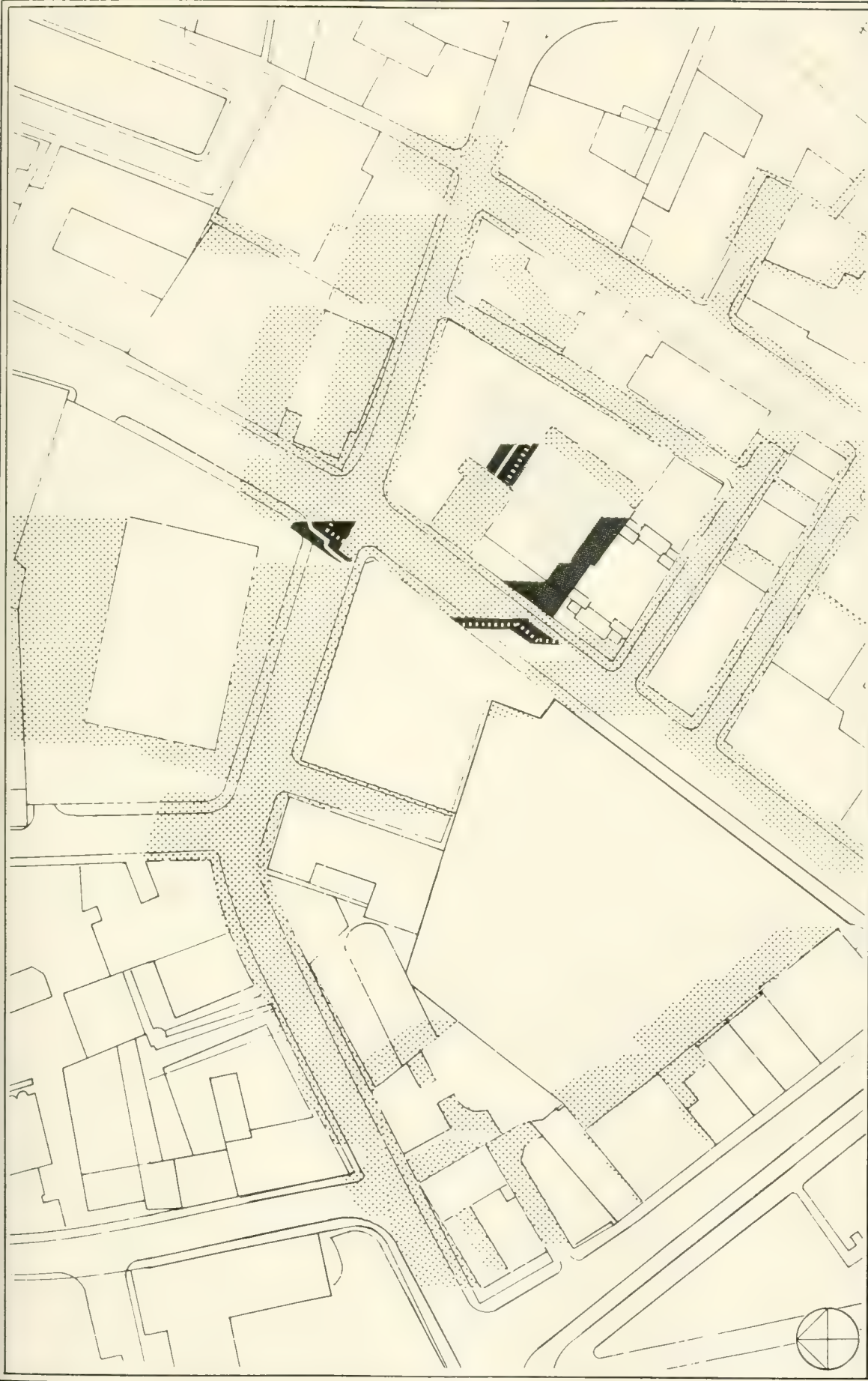
In conclusion, the only times studied showing the proposed Tremont Temple/90 Tremont Street project creating shadows on areas of concern were at 9:00 AM on March 21, June 22, and September 23 on the Granary Burying Ground, and at noon on March 21 and December 22 on the One Beacon Street plaza. The differences between the shadows on the Granary Burying Ground and One Beacon Street Plaza from the As-of-Right scenario, the Substantial Accord scheme, and the Proposed Project are minor. The Proposed Project also results in shadows on Tremont Street sidewalks at five of the times studied. At noon on June 22 and March 21, however, are the only times the Proposed Project results in greater shadows on Tremont Street sidewalks than the As-of-Right and Substantial Accord schemes. The King's Chapel Burial Grounds, Bosworth Street, and the Old City Hall open space do not experience any new shadow impact as a result of the Tremont Temple/90 Tremont Street project.

The following Figures 7.2-1 through 7.2-12 reveal the limited extent to which this project causes a shadow impact upon the surrounding area.



EXPLANATION	
	Existing Shadows
	Proposed Shadows
	As-of-Right Boundary
	Substantial Accord Boundary

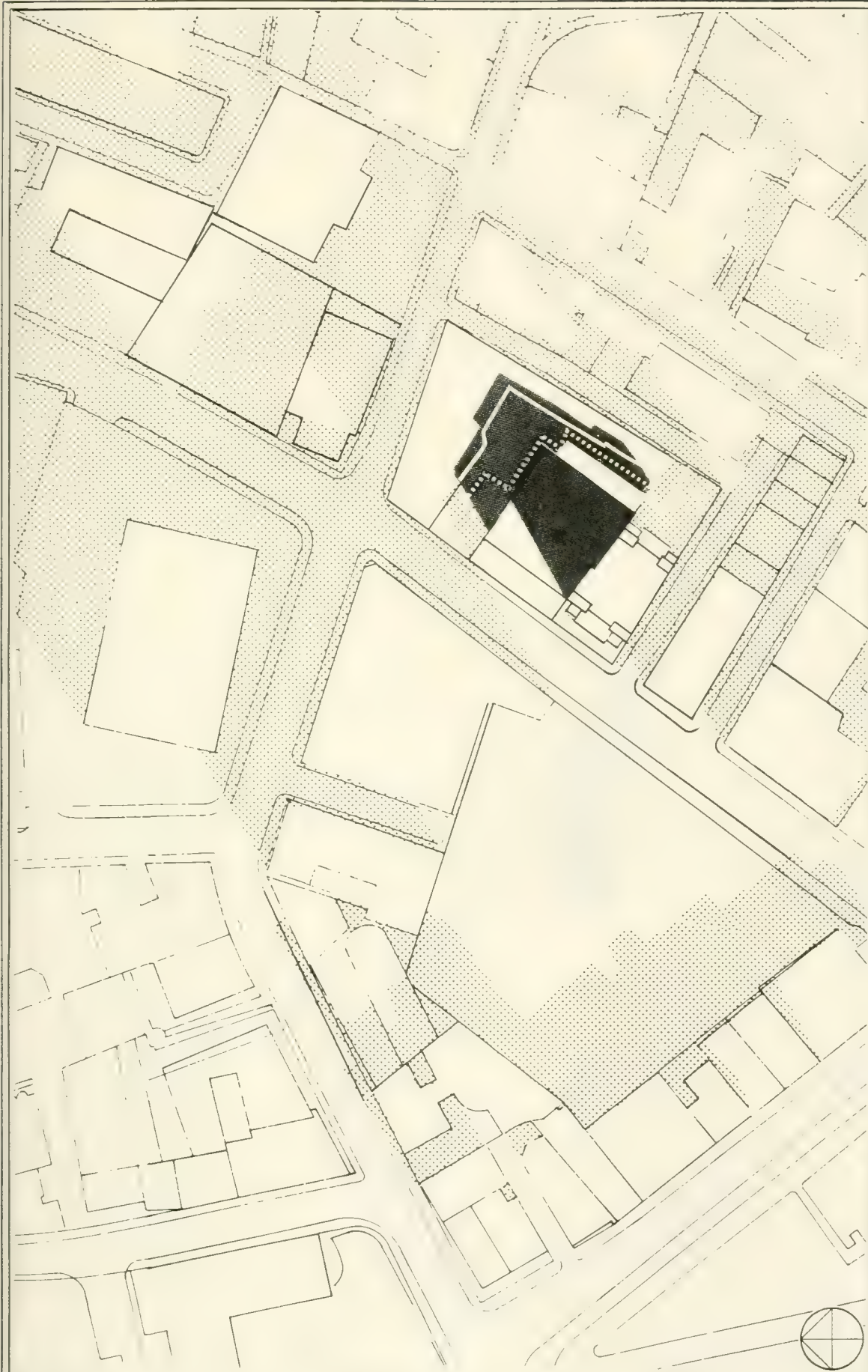
FIGURE 7.2-1
 EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
 vs. PROPOSED PROJECT
 MARCH 21, 1989 9:00 AM



EXPLANATION

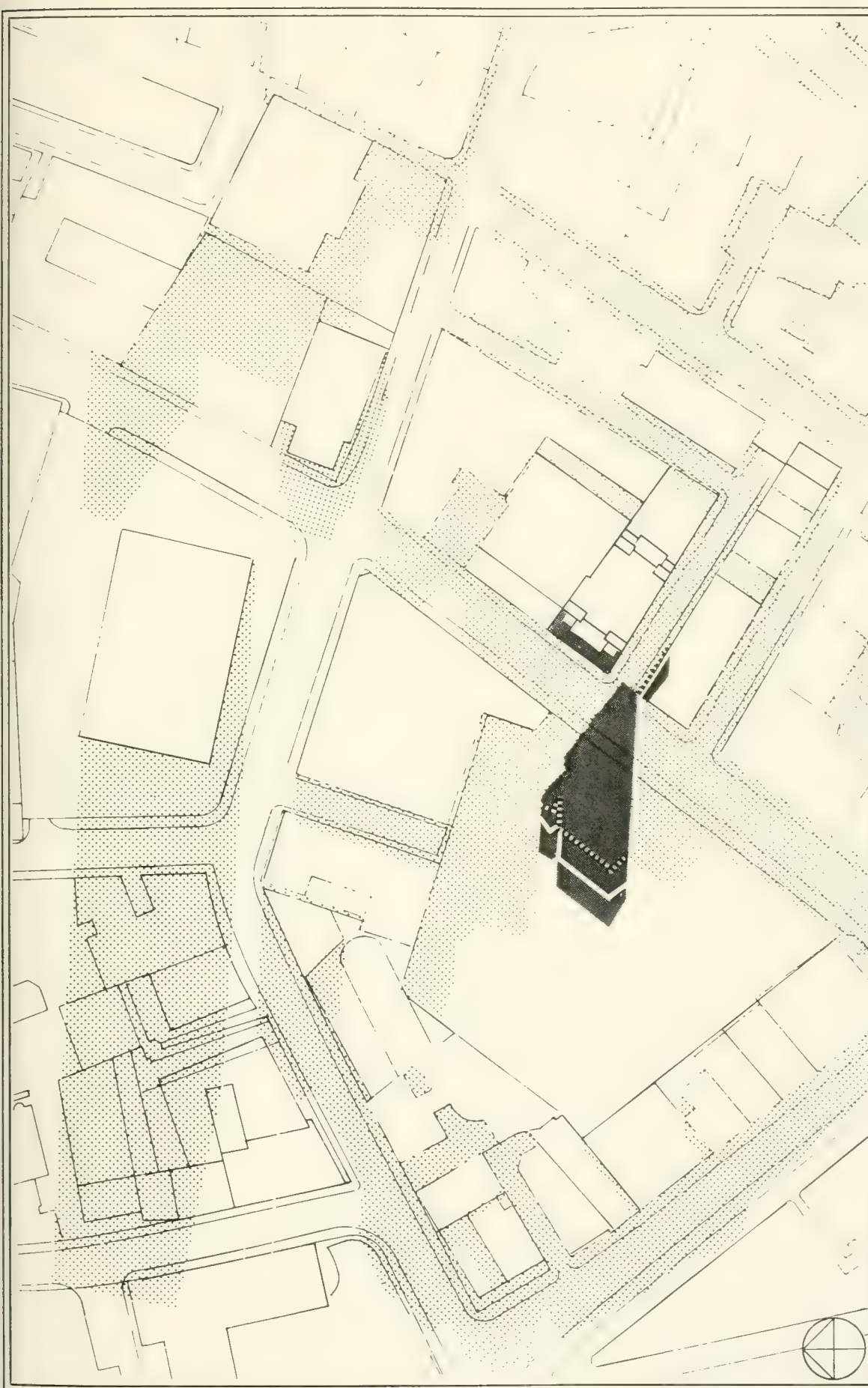
	Existing Shadows
	Proposed Shadows
	As-of-Right Boundary
	Substantial Accord Boundary

FIGURE 7.2-2
EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
vs. PROPOSED PROJECT
MARCH 21, 1989 12:00 NOON



EXPLANATION	
	Existing Shadows
	Proposed Shadows
	As-of-Right Boundary
	Substantial Accord Boundary

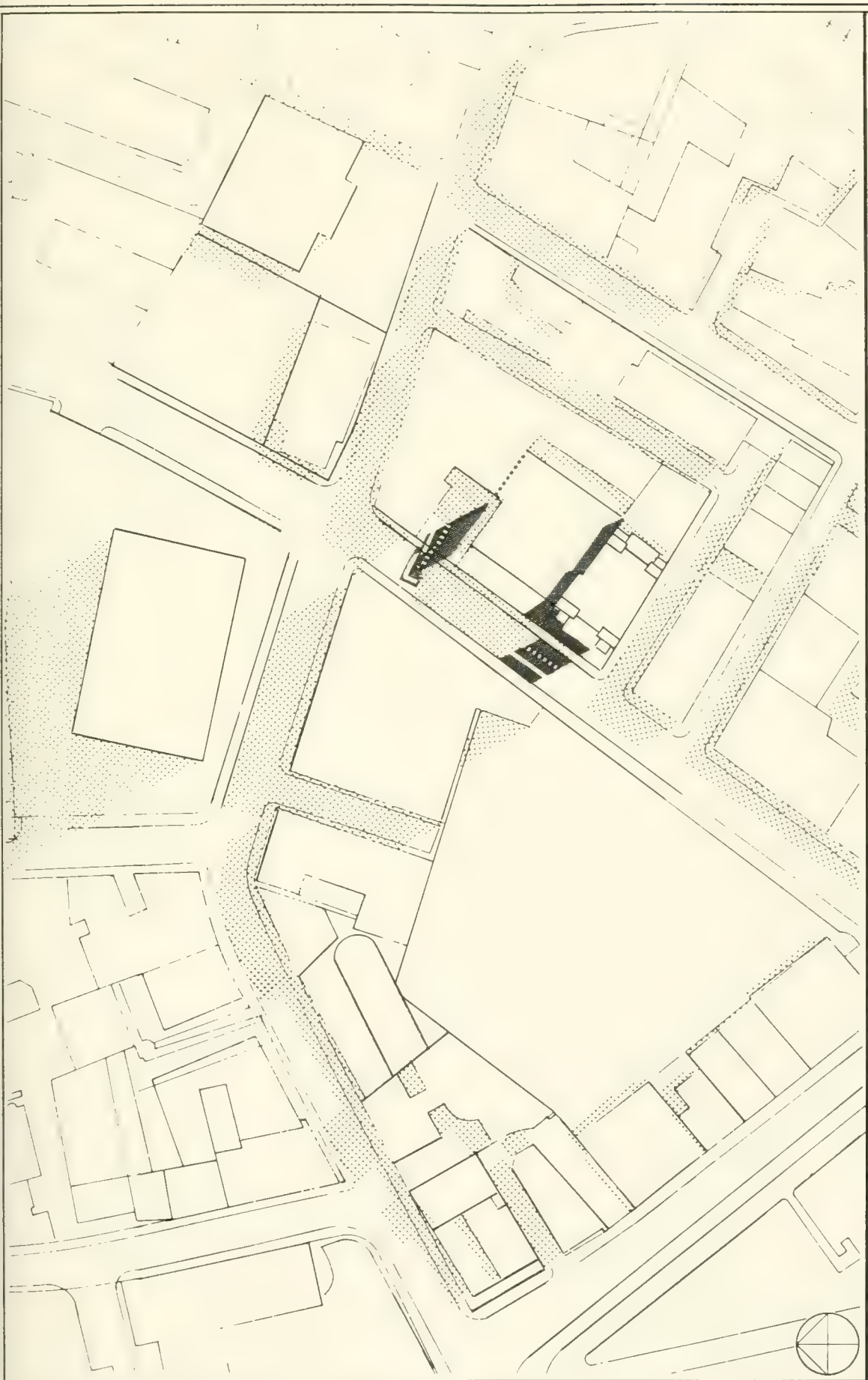
FIGURE 7.2-3
 EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
 vs. PROPOSED PROJECT
 MARCH 21, 1989 3:00 PM



EXPLANATION

-  Existing Shadows
-  Proposed Shadows
-  As-of-Right Boundary
-  Substantial Accord Boundary

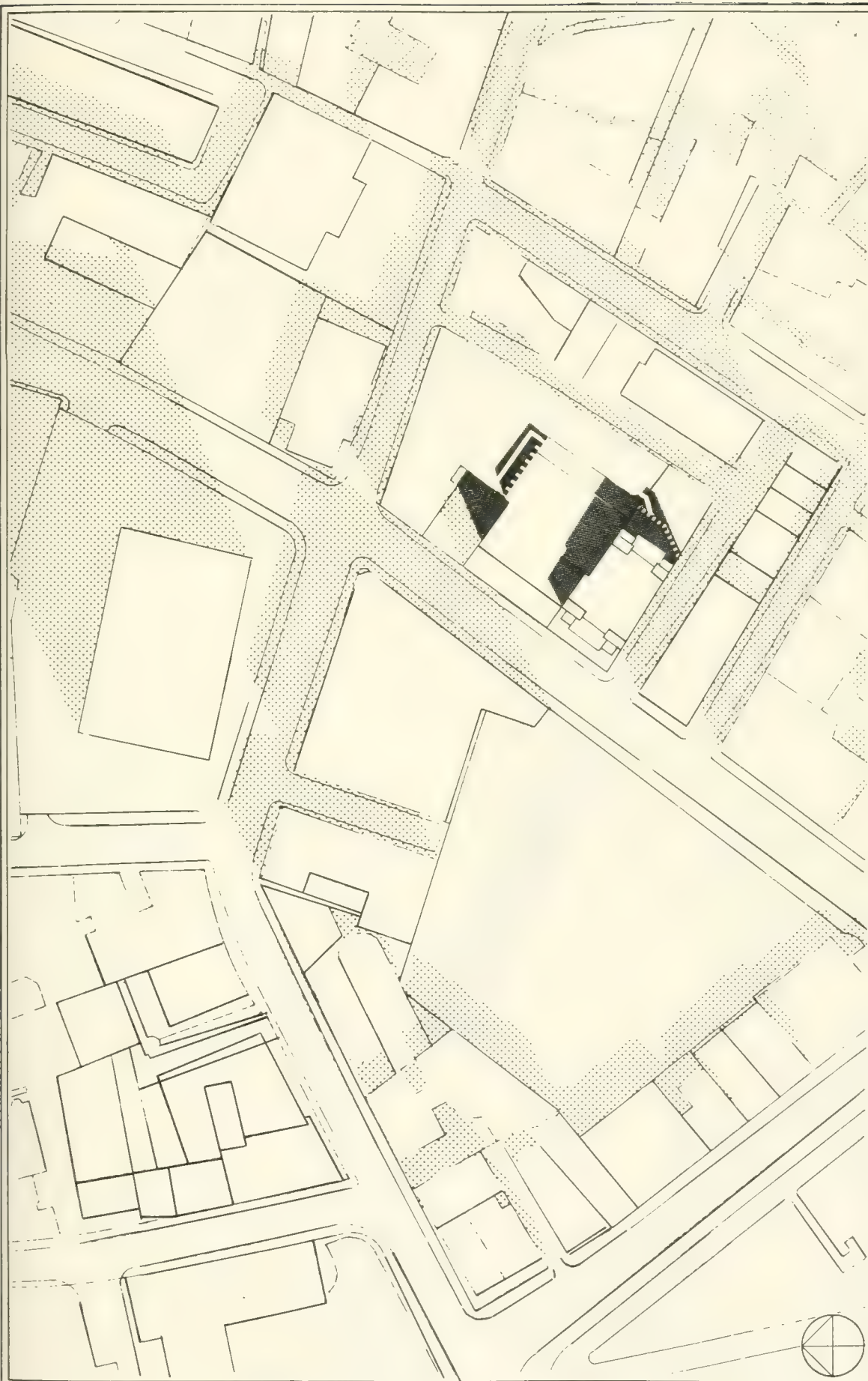
FIGURE 7.2-4
EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
vs. PROPOSED PROJECT
JUNE 22, 1989 9:00 AM



EXPLANATION

	Existing Shadows
	Proposed Shadows
	As-of-Right Boundary
	Substantial Accord Boundary

FIGURE 7.2-5
EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
vs. PROPOSED PROJECT
JUNE 22, 1989 12:00 NOON



EXPLANATION

-  Existing Shadows
-  Proposed Shadows
-  As-of-Right Boundary
-  Substantial Accord Boundary

FIGURE 7.2-6
EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
vs. PROPOSED PROJECT
JUNE 22, 1989 3:00 PM

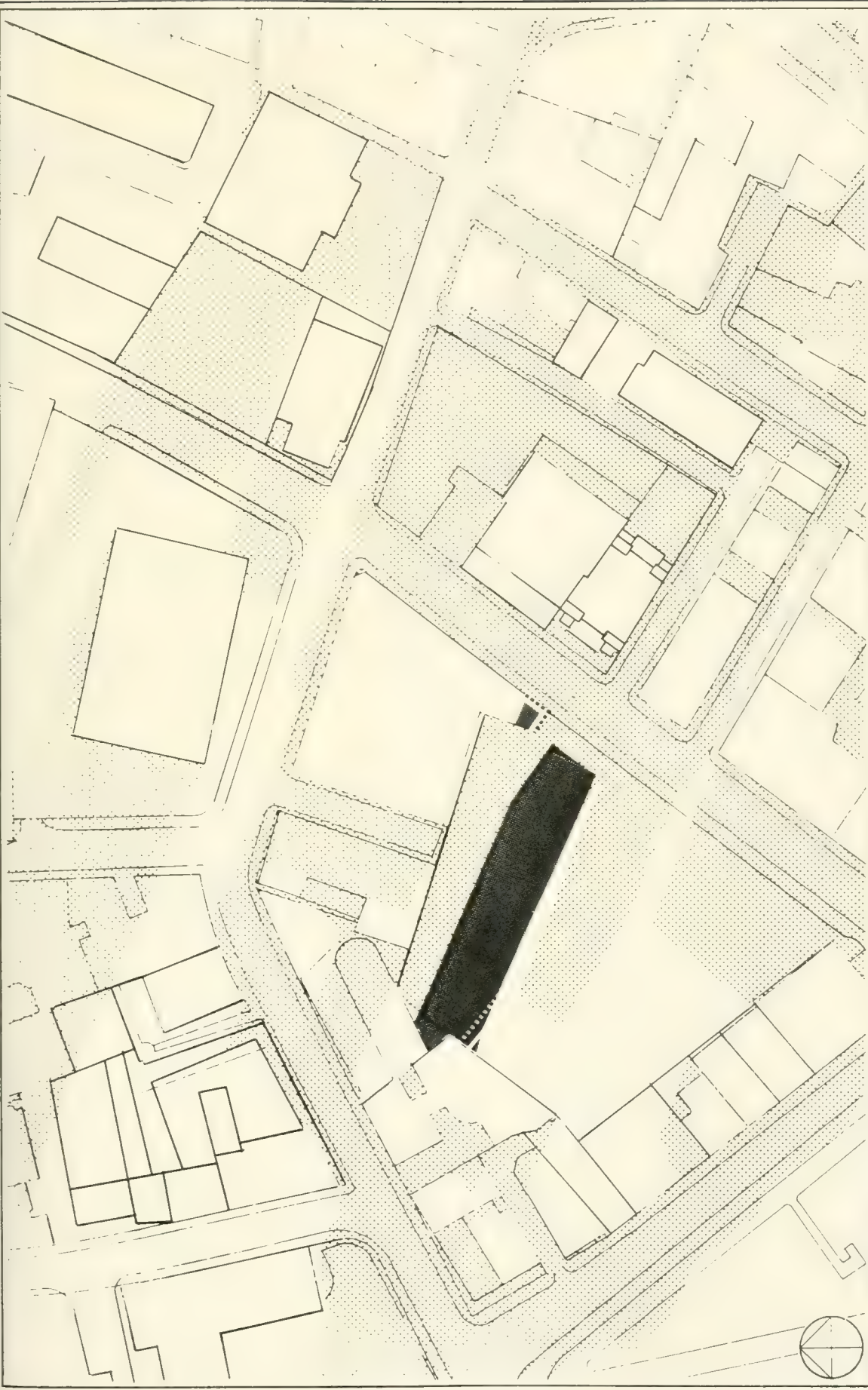
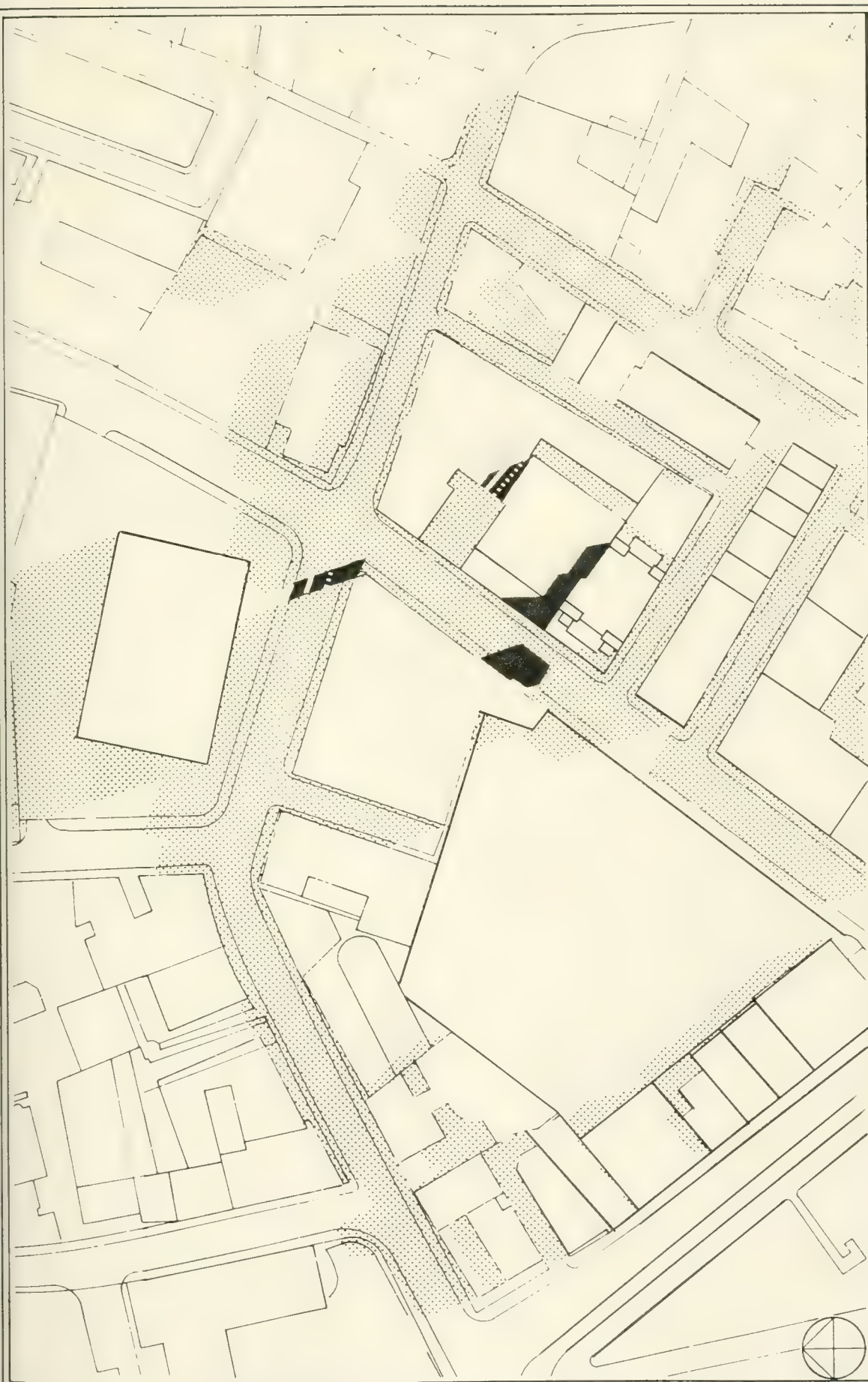


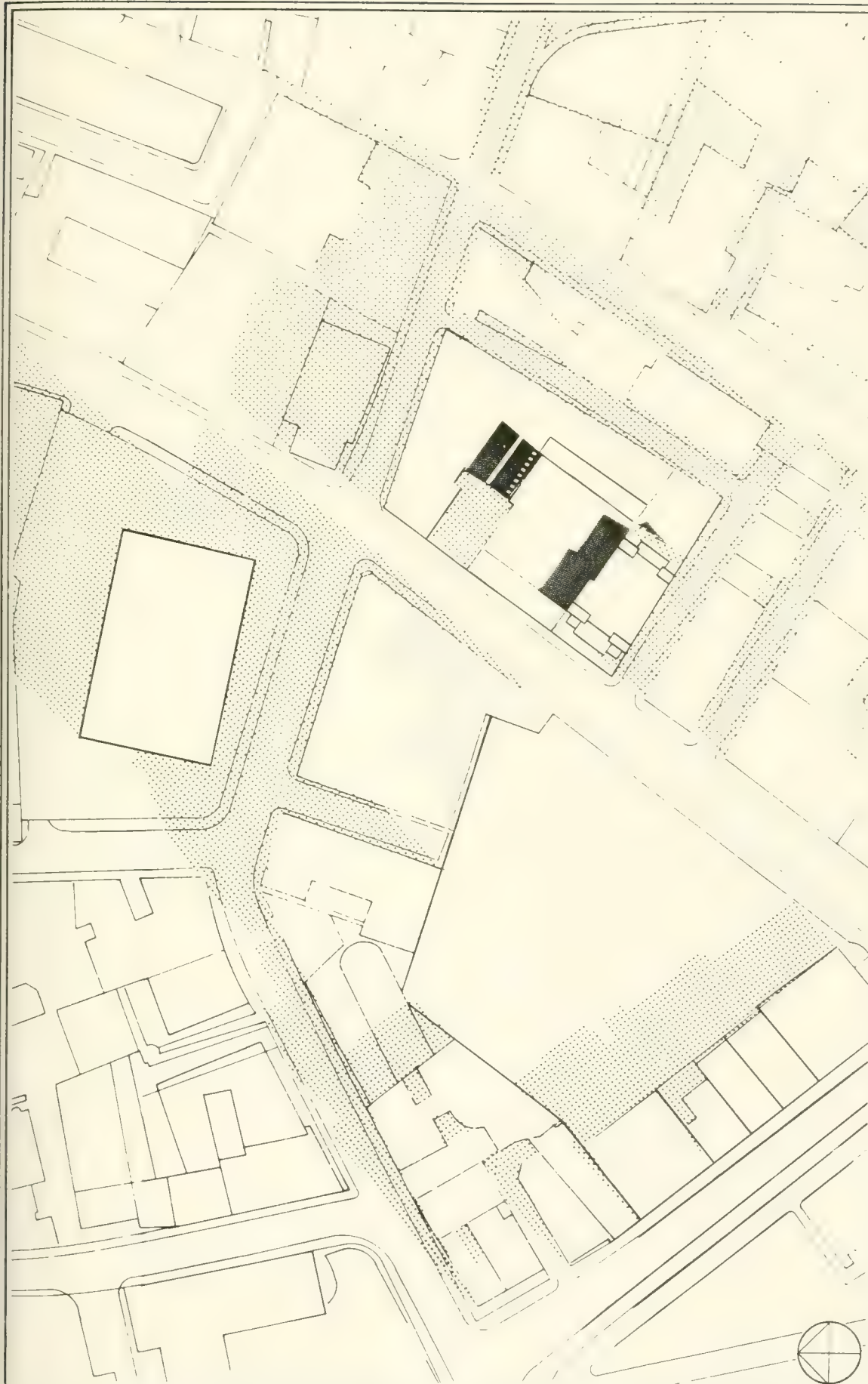
FIGURE 7.2-7
 EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
 vs. PROPOSED PROJECT
 SEPTEMBER 23, 1989 9:00 AM

EXPLANATION	
	Existing Shadows
	Proposed Shadows
	As-of-Right Boundary
	Substantial Accord Boundary



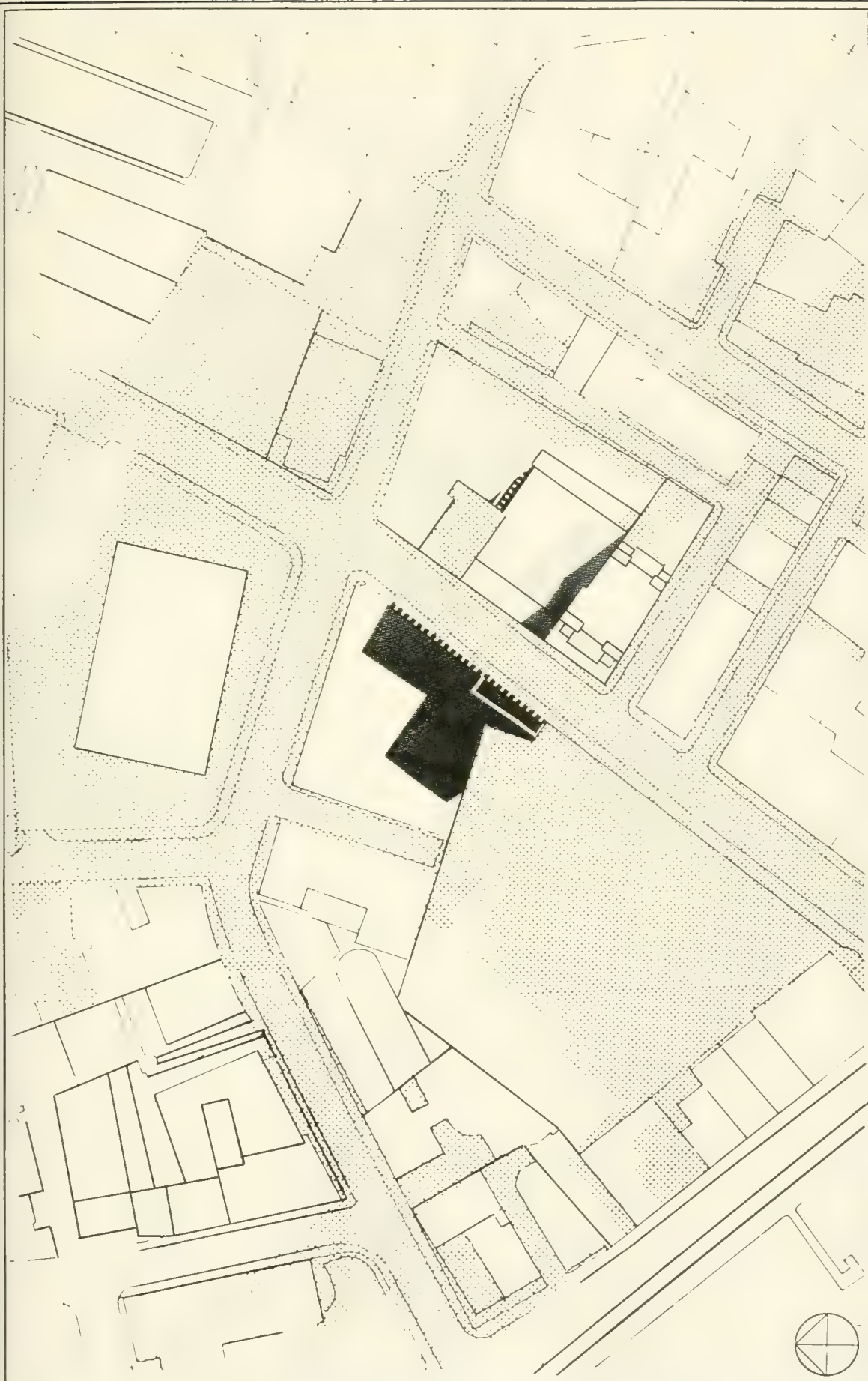
EXPLANATION	
	Existing Shadows
	Proposed Shadows
	As-of-Right Boundary
	Substantial Accord Boundary

FIGURE 7.2-8
 EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
 vs. PROPOSED PROJECT
 SEPTEMBER 23, 1989 12:00 NOON



EXPLANATION	
	Existing Shadows
	Proposed Shadows
	As-of-Right Boundary
	Substantial Accord Boundary

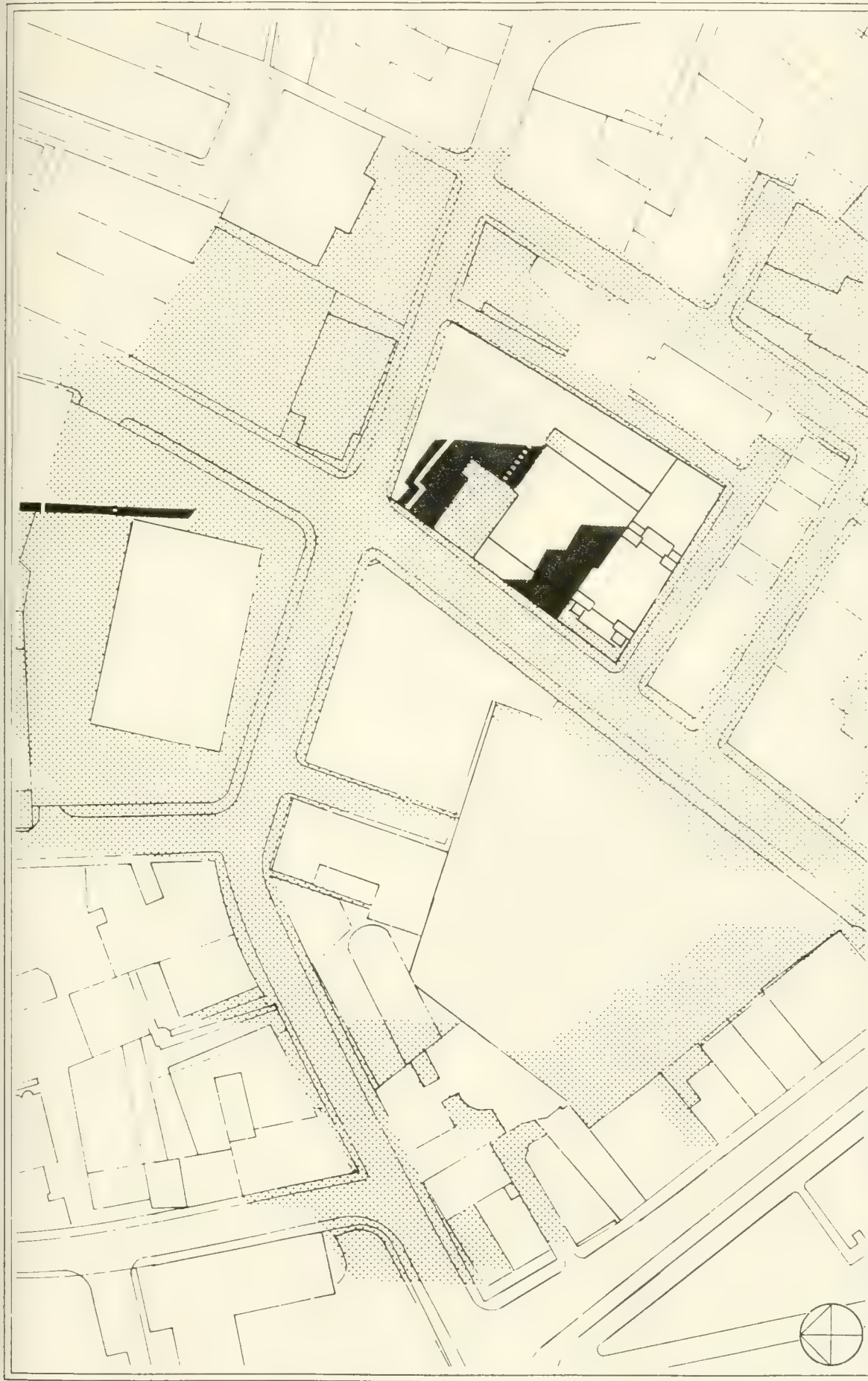
FIGURE 7.2-9
EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
vs. PROPOSED PROJECT
SEPTEMBER 23, 1989 3:00 PM



EXPLANATION

-  Existing Shadows
-  Proposed Shadows
-  As-of-Right Boundary
-  Substantial Accord Boundary

FIGURE 7.2-10
EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
vs. PROPOSED PROJECT
DECEMBER 21, 1989 9:00 AM



EXPLANATION

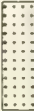
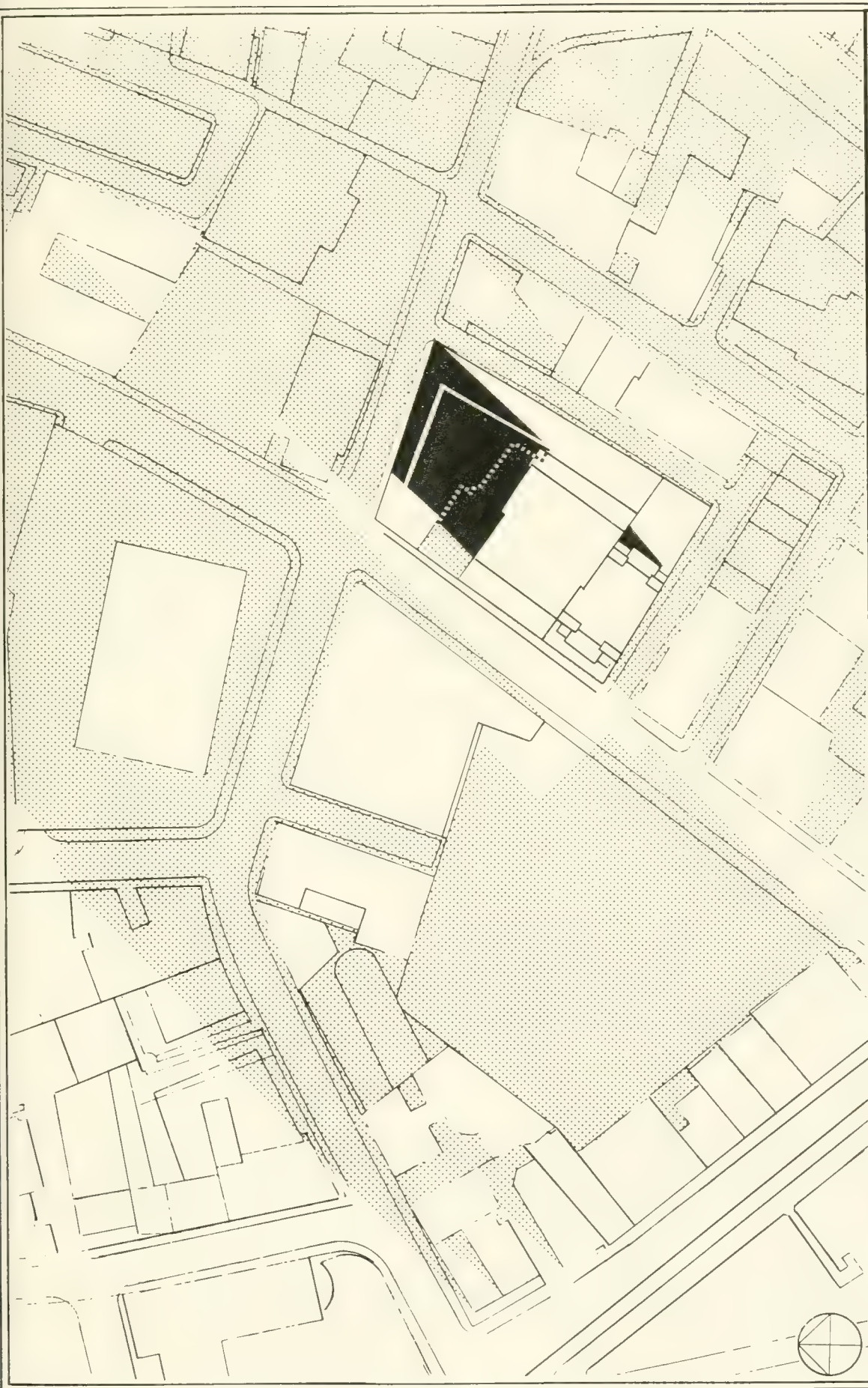
	Existing Shadows
	Proposed Shadows
	As-of-Right Boundary
	Substantial Accord Boundary

FIGURE 7.2-11
 EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
 vs. PROPOSED PROJECT
 DECEMBER 21, 1989 12:00 NOON



EXPLANATION

-  Existing Shadows
-  Proposed Shadows
-  As-of-Right Boundary
-  Substantial Accord Boundary

FIGURE 7.2-12
EXISTING SHADOWS vs. AS-OF-RIGHT vs. SUBSTANTIAL ACCORD
vs. PROPOSED PROJECT
DECEMBER 21, 1989 3:00 PM

7.3 Daylight

7.3.1 Introduction

The purpose of a daylight analysis is to estimate the effect of a proposed project on the amount of daylight reaching the street level, given the existing and proposed massing of buildings along adjacent city streets. This is done indirectly by estimating the amount of sky visible from the street. The more sky that is visible, the more light that will reach the street. For the proposed Tremont Temple/90 Tremont Street project, the daylight analysis included calculations of the daylight obstruction on Tremont Street and Bosworth Street from existing buildings on the site, the Proposed Project, and an As-of-Right scenario. The Substantial Accord scheme is also discussed.

7.3.2 Methodology

The daylight analysis study was performed utilizing the Boston Redevelopment Authority's Daylight Analysis (BRADA)* computer software. A "fish eye" view of the building is taken at ground level from the center of adjacent city streets. The existing buildings and proposed project's footprint, setbacks, corners, and other features are plotted onto a base map using lateral and elevation angles to provide a picture of the "sky exposure" from a point chosen.

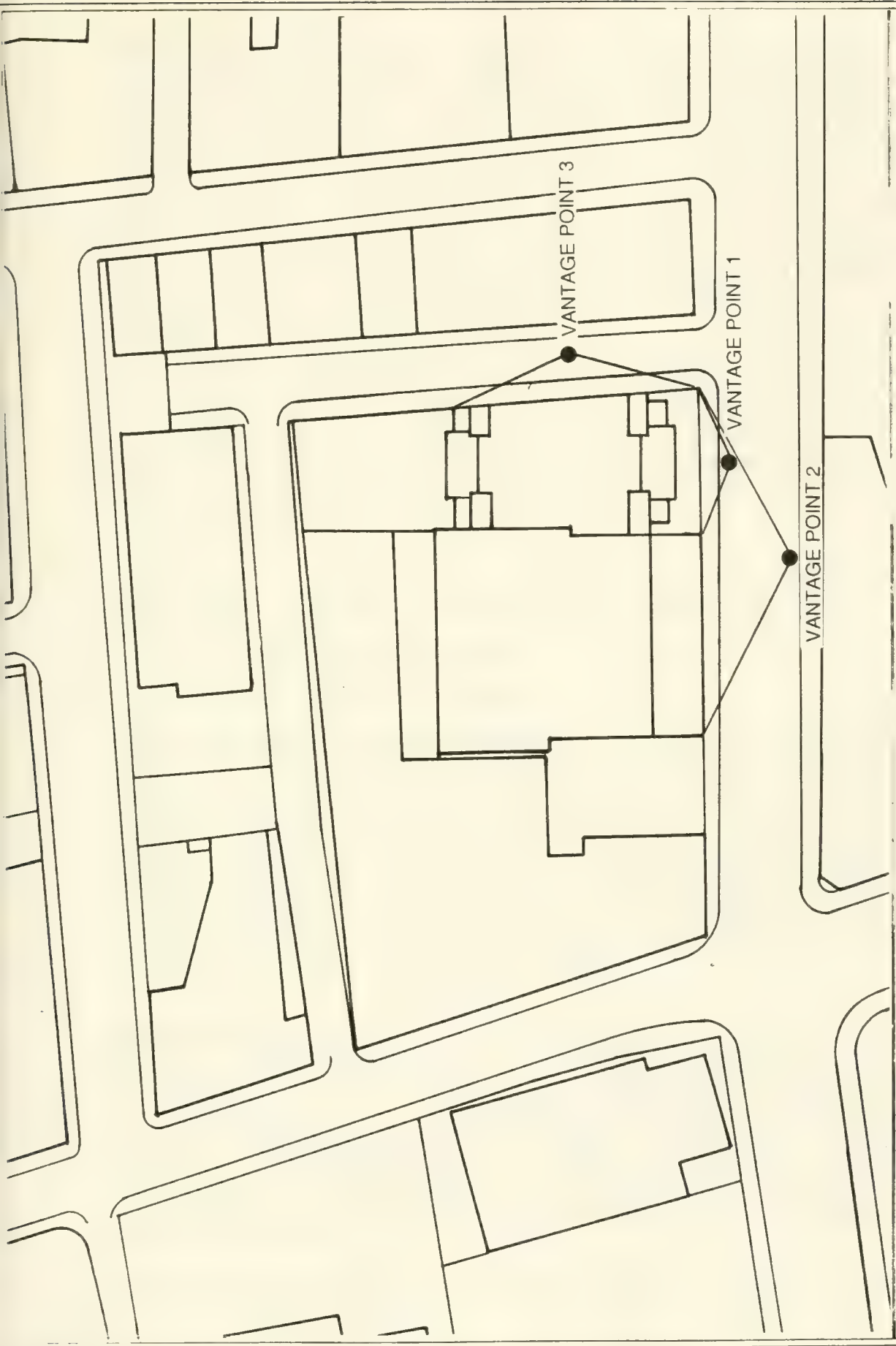
7.3.3 Observation Points

Daylight studies were calculated on two sides of the project site. Figure 7.3-1 shows the location of each vantage point. In all, three vantage points were studied. Two were selected on Tremont Street with one focused on a sixty-four foot long section extending northeasterly from the corner of Bosworth Street and Tremont Street (Vantage Point 1). The second vantage point on Tremont Street is located at the center of a segment that runs northeasterly 164 feet from the corner of Bosworth Street and Tremont Street (Vantage Point 2). The third vantage point focused on a one hundred and nineteen foot stretch that extended to the southeast from the corner of Bosworth Street and Tremont Street (Vantage Point 3).

7.3.4 Analysis Results

Table 7.3-1 shows the results of the daylight analysis. The analysis indicates that the proposed structures will result in an increase in daylight obstruction over the existing configuration of buildings. However, the amount of daylight

* Harvey Bryan and Susan Stuebing, Boston Redevelopment Authority Daylight Analysis ("BRADA"), MIT, Cambridge, MA



SCALE
1" = 60'

FIGURE 7.3-1
LOCATION OF VANTAGE POINTS

obstruction resulting from the Proposed Project is only minimally more than the amount of daylight obstruction resulting from the As-of-Right scheme. The amount of daylight obstruction from the Substantial Accord scheme, which is one story taller than the As-of-Right scenario, would be negligibly greater than the daylight obstruction from the As-of-Right scheme. The largest increase in daylight obstruction from the vantage points studied will occur at 90 Tremont Street, near the corner of Tremont Street and Bosworth Street (Vantage Point 1). While the existing building at 90 Tremont Street results in less daylight obstruction, the two story building is an aberration in the streetscape. The scale of the existing building is not compatible with the scale of the surrounding structures. The proposed 16 story structure at 90 Tremont Street will result in a noticeable increase in daylight obstruction, a level, however, that is more consistent with surrounding structures. The smallest increase in daylight obstruction from the vantage points studied occurs along Tremont Street at Vantage Point 2 which is the center point on Tremont Street between Tremont Temple and the 90 Tremont Street site.

Figures 7.3-2 through 7.3-10 graphically depict the daylight obstruction from each view point for three cases:

- o Existing Conditions
- o Proposed Project
- o As-of-Right Scenario

Northeast View (Tremont Street and Bosworth Street - Vantage Point 1): The existing daylight obstruction at 90 Tremont Street, from Vantage Point 1, is approximately 48%. As described above, this vantage point shows the greatest increase in daylight obstruction resulting from the Proposed Project. The daylight obstruction increases to 85% with the proposed building. The increase is due to the difference in building heights between the existing two story building and the proposed 16 story building at 90 Tremont Street. The As-of-Right scenario causes slightly less obstruction (-2%) daylight than the Proposed Project.

Northeast View (Tremont Street - Vantage Point 2): Under existing conditions, shown in Figure 7.3-5, the amount of daylight obstruction on Tremont Street from Vantage Point 2 is approximately 74%. The amount of daylight obstruction increases by only 11% to approximately 85% with construction of the proposed building. The small increase is a direct result of the proposed setback design above Tremont Temple. Similarly, the As-of-Right scheme increases daylight obstruction to a level of approximately 85%, the same as the proposed building.

Southeast View (Bosworth Street - Vantage Point 3): Existing

daylight obstruction along Bosworth Street is approximately 60%. The proposed building will result in daylight obstruction of approximately 94%. The difference is due to the change in heights from the existing two story building at 90 Tremont Street to the proposed sixteen story building which is more consistent with the surroundings.

Daylight obstruction along Bosworth Street is somewhat greater than levels along Tremont Street due to a decreased setback of upper levels along Bosworth Street and the narrower width of Bosworth Street. The daylight obstruction resulting from the As-of-Right scheme is lower than the proposed structures.

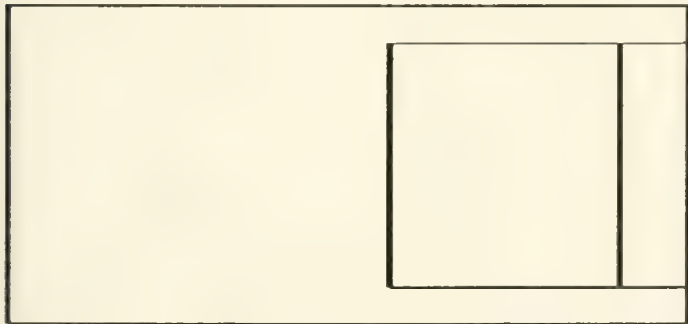
TABLE 7.3-1

PERCENT DAYLIGHT OBSTRUCTED

<u>View</u>	<u>Street</u>	<u>Vantage Point</u>	<u>Existing</u>	<u>Proposed</u>	<u>As-of-Right</u>
Northeast	Tremont/ Bosworth	1	48	85	83
Northeast	Tremont	2	74	85	85
Southeast	Bosworth	3	60	94	93
WEIGHTED AVERAGE			64	88	87*

* The amount of daylight obstruction from the Substantial Accord scheme would fall between the Proposed Project and the As-of-Right scenario and would be between 86 and 87 percent.





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Authority
Daylighting
Analysis

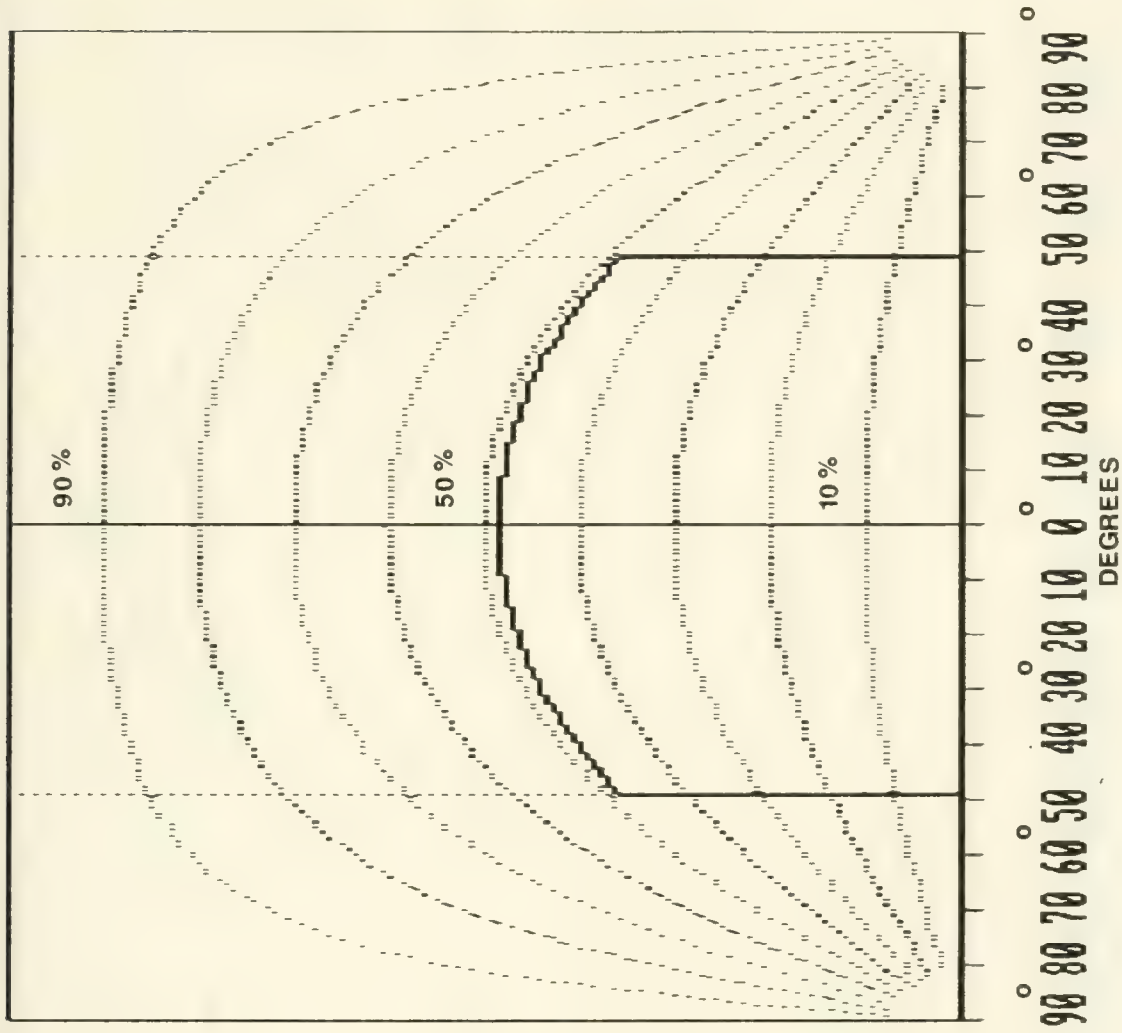
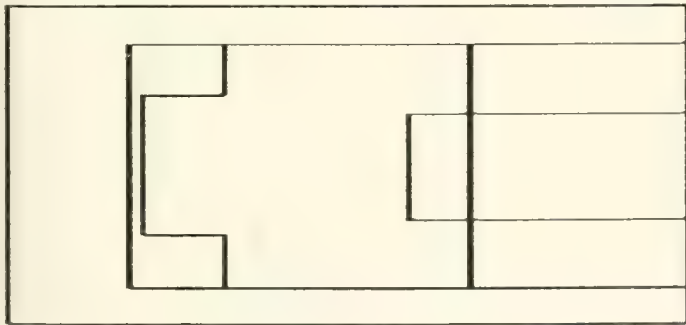


FIGURE 7.3-2
VANTAGE POINT 1
90 TREMONT STREET EXISTING CONDITIONS



ELEVATION

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Daylighting
Analysis

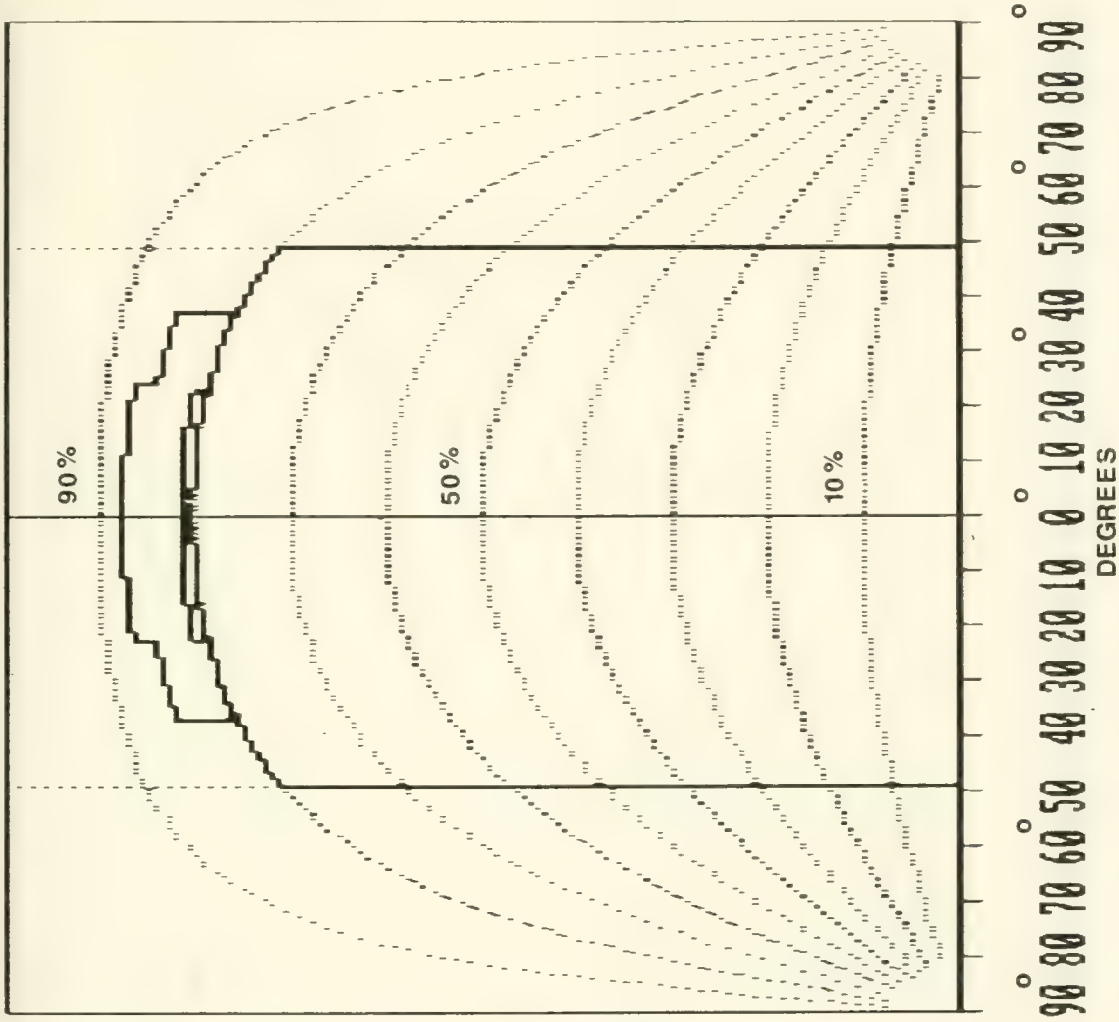
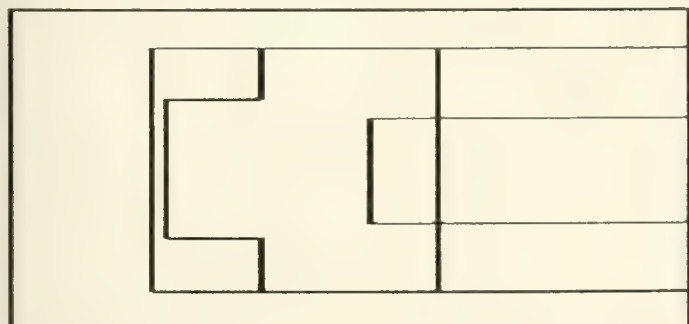


FIGURE 7.3-3
VANTAGE POINT 1
90 TREMONT STREET PROPOSED



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Analysis

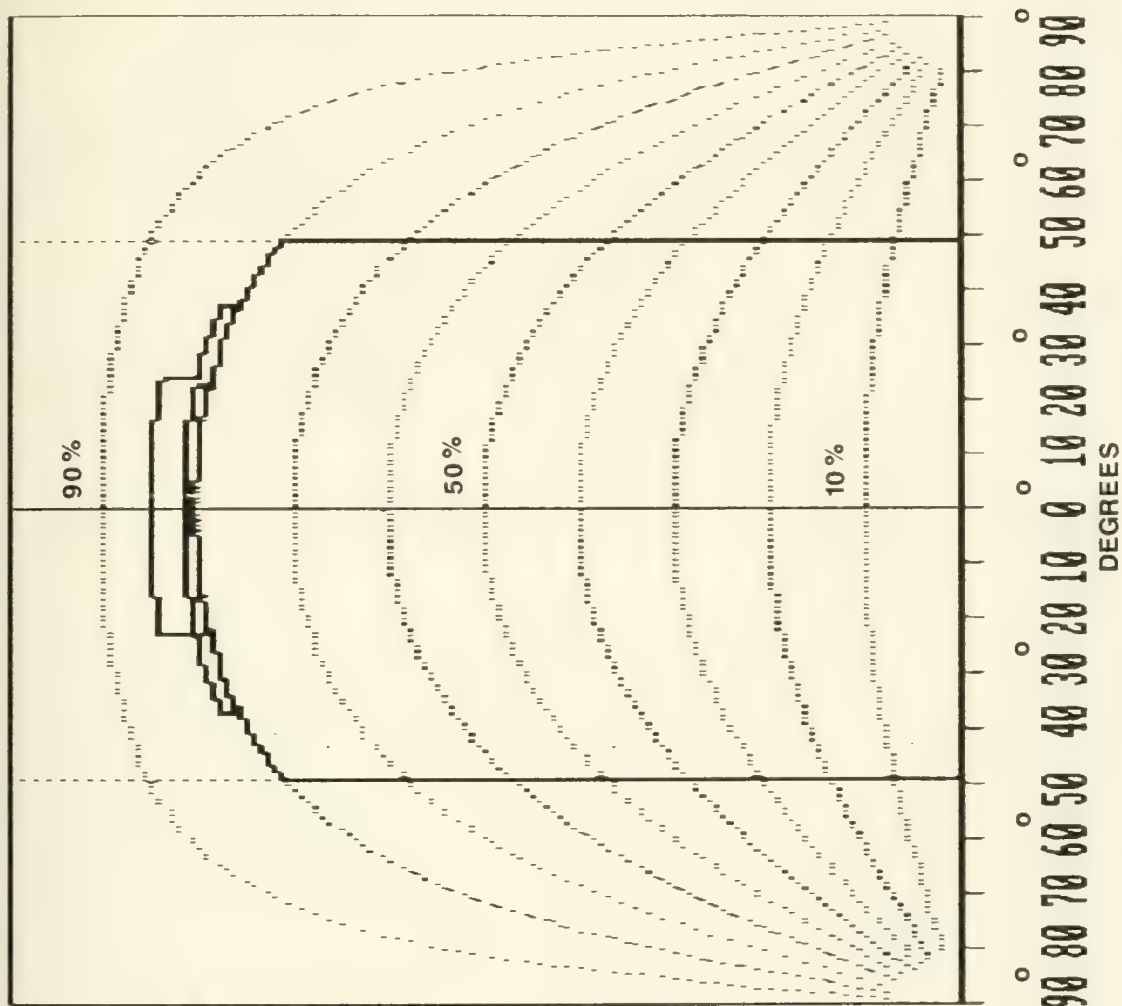
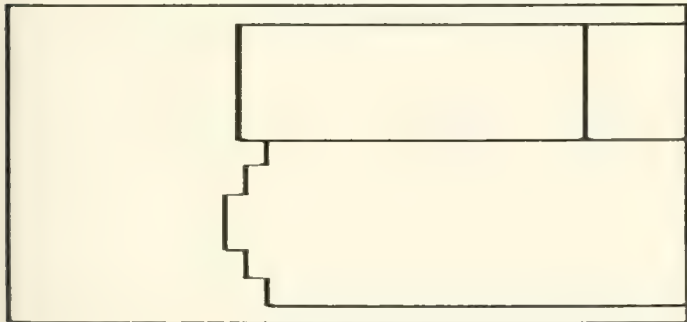


FIGURE 7.3-4
VANTAGE POINT 1
90 TREMONT STREET AS-OF-RIGHT



ELEVATION

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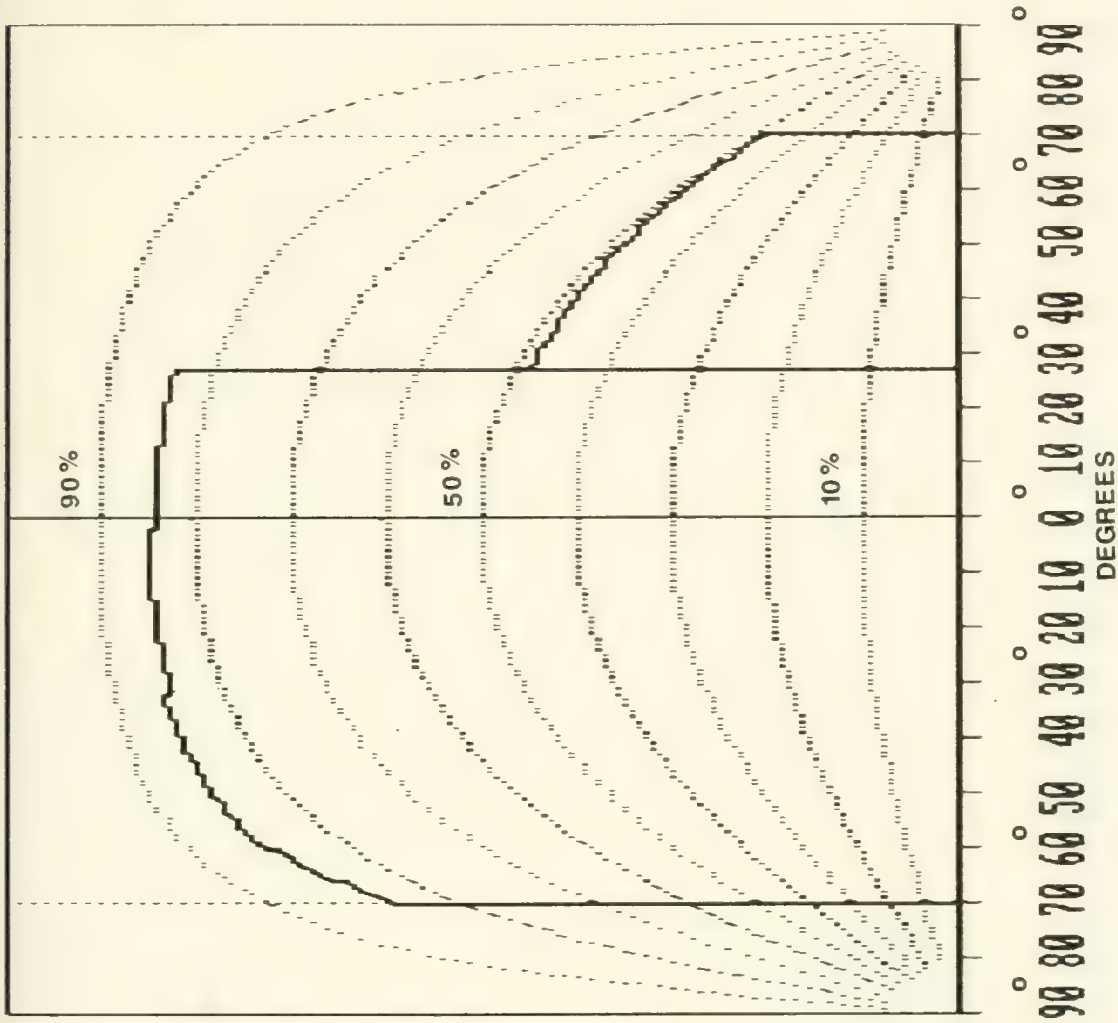
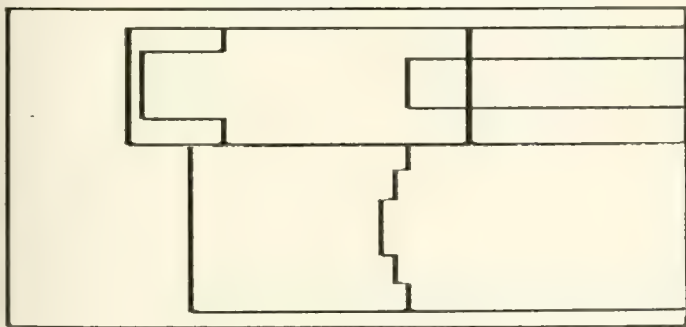


FIGURE 7.3-5
VANTAGE POINT 2
TREMONT TEMPLE/90 TREMONT STREET EXISTING CONDITIONS



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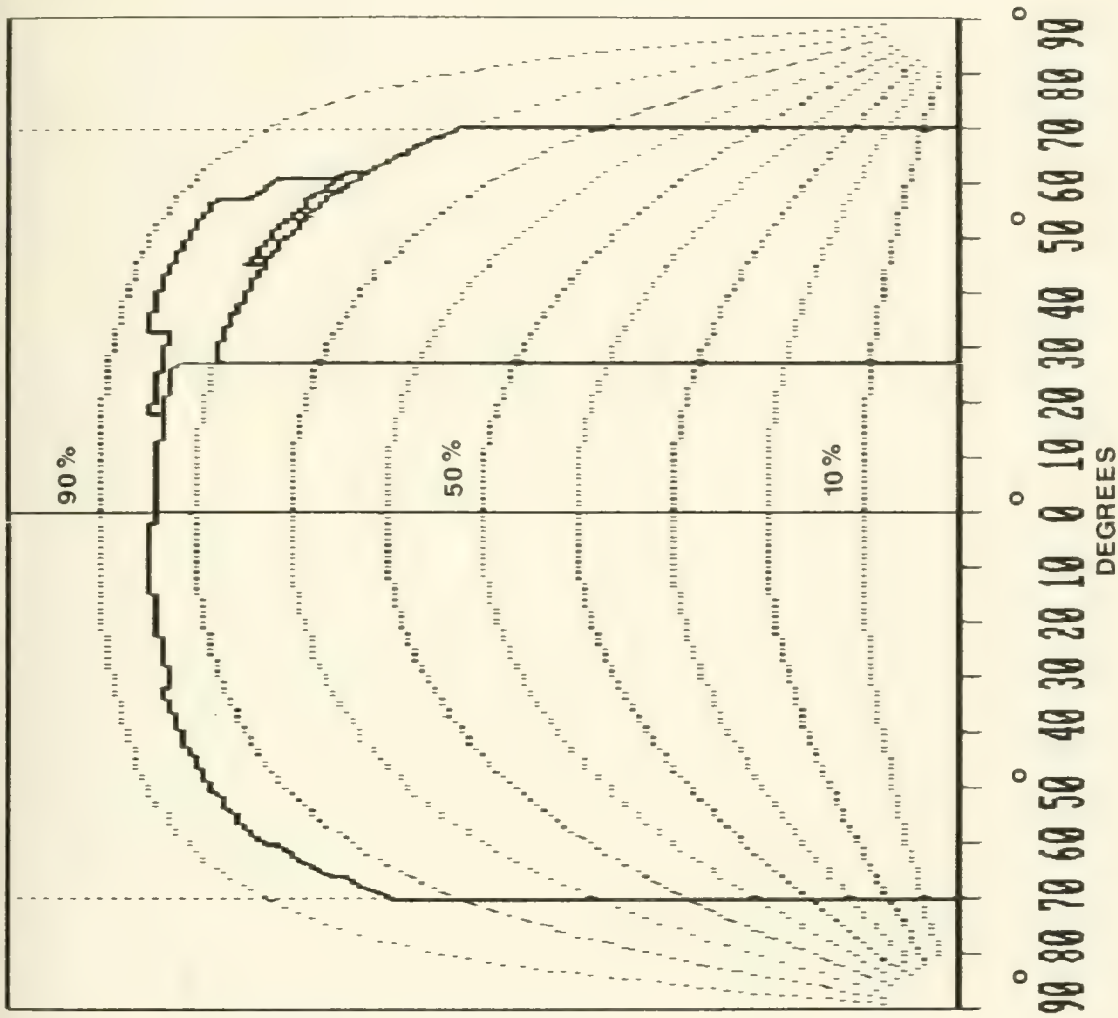
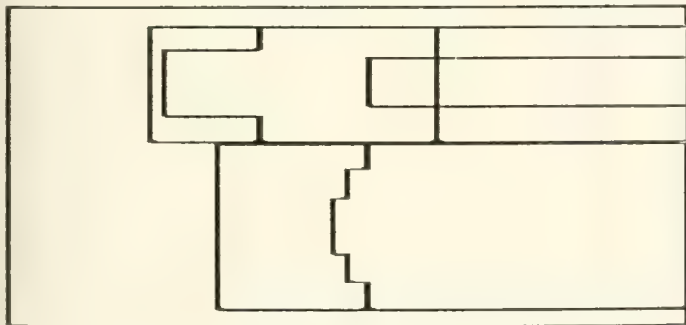


FIGURE 7.3-6
VANTAGE POINT 2
TREMONT TEMPLE/90 TREMONT STREET PROPOSED



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Analysis

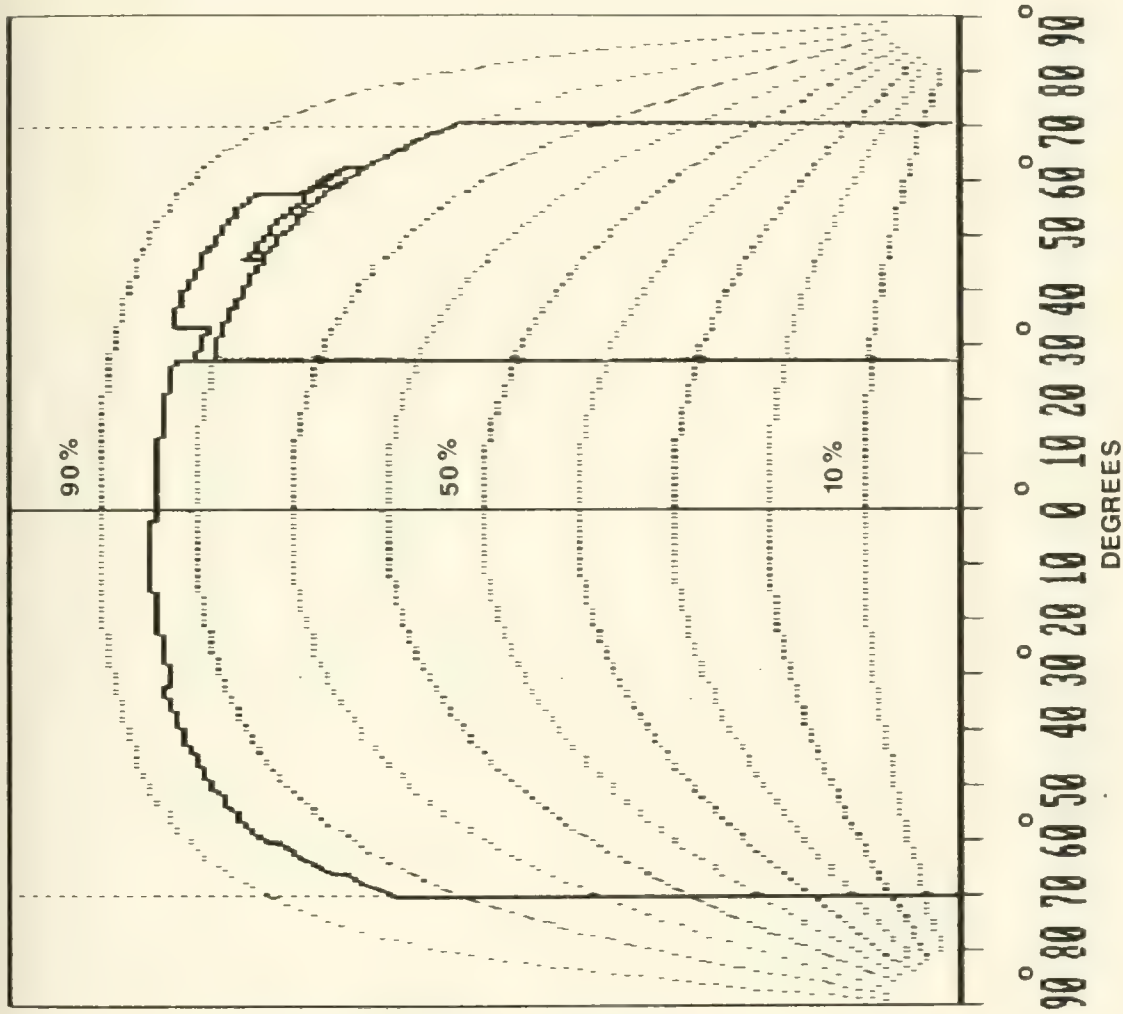
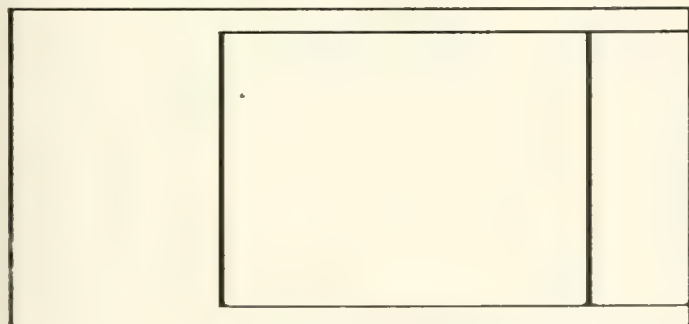


FIGURE 7.3-7
VANTAGE POINT 2
TREMONT TEMPLE/90 TREMONT STREET AS-OF-RIGHT



ELEVATION

Boston
Redevelopment
Authority
Daylighting
Analysis

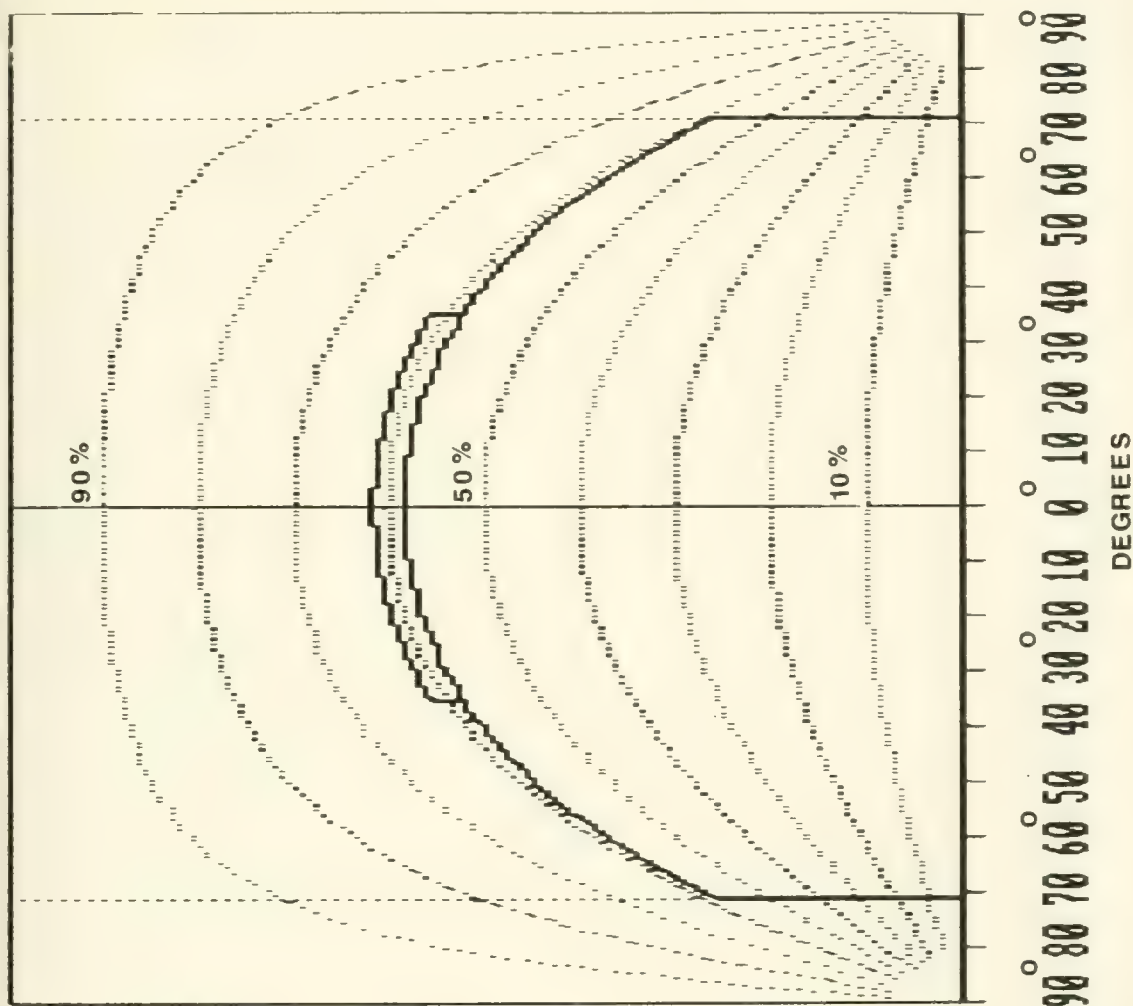
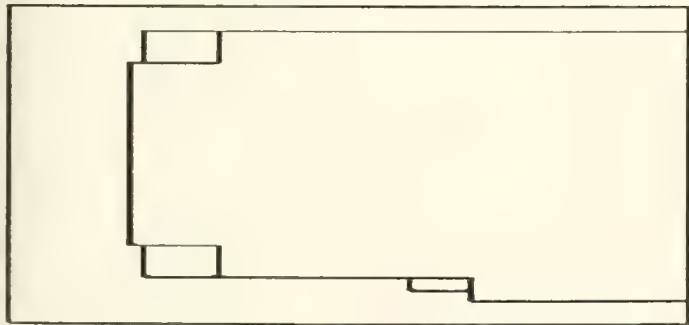


FIGURE 7.3-8
VANTAGE POINT 3
90 TREMONT STREET (BOSWORTH STREET) EXISTING CONDITIONS



ELEVATION

Boston
Redevelopment
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Daylighting
Analysis

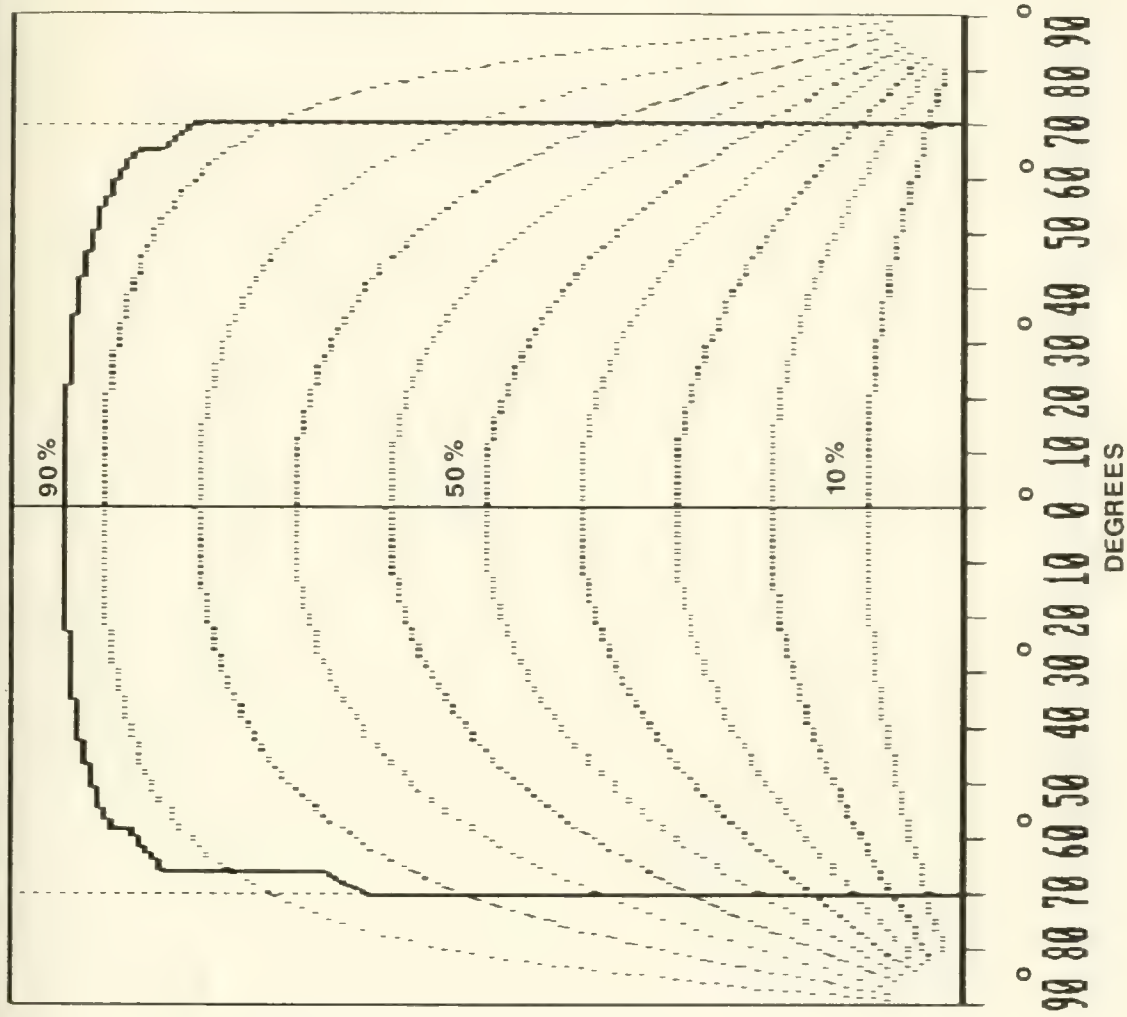
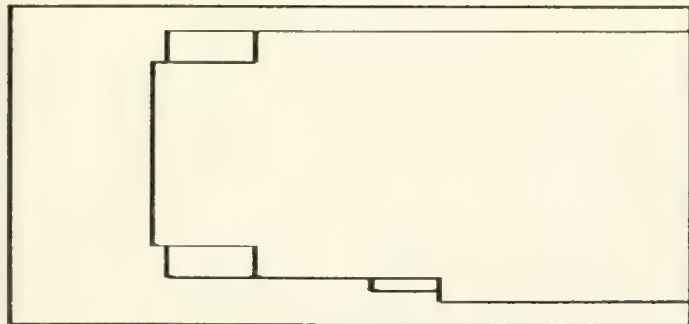


FIGURE 7.3-9
VANTAGE POINT 3
90 TREMONT STREET (BOSWORTH STREET) PROPOSED



ELEVATION

Boston
Redevelopment
Authority
Daylighting
Analysis

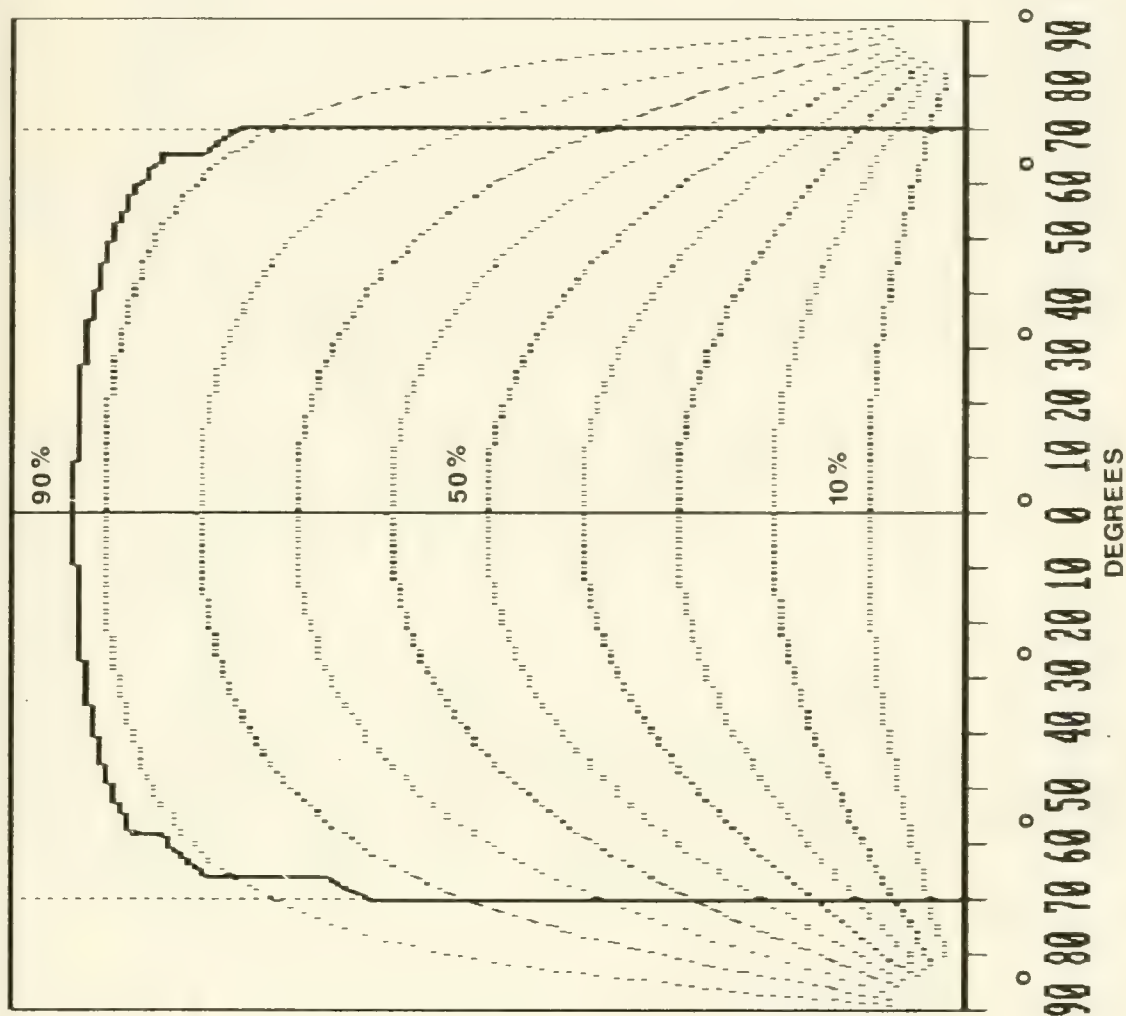


FIGURE 7.3-10
VANTAGE POINT 3
90 TREMONT STREET (BOSWORTH STREET) AS-OF-RIGHT

7.3.5 Summary

Overall, the average daylight obstruction from the three vantage points increases by 24 percent over existing conditions with the proposed configuration. There is, however, only minimal difference in daylight obstruction between the As-of-Right scenario and the Proposed Project. The percent of daylight obstruction from the Substantial Accord scheme would fall between the Proposed Project and the As-of-Right scenarion. The three schemes, As-of-Right, Substantial Accord, and Proposed Project, result in similar daylight obstruction. The areas with the most noticeable increase in daylight obstruction occur along Bosworth Street and Tremont Street near the intersection with Bosworth. The increased daylight obstruction stems from the height differential between the existing dilapidated building at 90 Tremont Street and the Proposed Project.

The average percentage of daylight obstruction in downtown Boston is typically 80 to 90 percent. The proposed building will result in daylight obstruction values typical of the average of other downtown areas.

7.4 Air Quality

7.4.1 Introduction

An air quality analysis was performed to determine impacts of the Tremont Temple/90 Tremont Street's proposed 80 space parking garage. The parking facility analysis predicted maximum 1-hour and 8-hour CO concentrations from the parking garage at the three following locations:

- o The closest edge of the Parker House on Tremont Street;
- o Directly below the assumed exhaust location; and
- o The corner of Tremont and Bosworth streets.

7.4.2 Methodology

The exhaust locations and ventilation design parameters currently under consideration were modeled. It is currently anticipated that the proposed underground garage will be serviced by a forced air ventilation unit. Exhaust vents will be located 12 feet above ground level on the side of the project closest to the Omni Parker House Hotel (northeast side). The exhaust vents will have a total area of approximately 40 square feet with a flow rate totalling about 38,000 to 40,000 cubic feet per minute (cfm).

The proposed parking garage is a two level valet operated garage with two elevators to transport cars to and from the lower levels. The round trip time for the elevator is estimated at one minute. Worst case emissions are expected

during the peak AM hour when queues could possibly develop within the garage at the elevator doors. During the peak AM hour there is an expected demand of 40 incoming vehicles.

Emissions for the 1-hour case were estimated based on an idling period of two minutes for each of the 40 vehicles and a travelling time of 30 seconds at 15 miles per hour (mph). Motor vehicle emission rates used in this analysis were generated by the EPA MOBILE4 computer program, using Department of Environmental Protection's established Massachusetts inputs for peak one-hour periods. The one-hour emission rates determined from MOBILE4 are 12.13 grams per minute (g/min) idle mode emission rate and 43.44 grams per mile (g/mi) at 15 mph. The ventilation system will emit a total of 0.33 grams per second (g/s) of carbon monoxide (CO) during the peak 1-hour period.

The concentration of CO in the ventilation system exhaust was determined by the following formula:

$$X = 870[Q + (X_b)(F)]F$$

where: X = CO concentration in the ventilation exhaust - parts per million (ppm)
 Q = CO emission rate for the vent
 X_b = Background concentration of CO in the makeup air
 F = Volumetric flow rate in cubic meters per second (m^3/s)

A background concentration of 5.0 ppm [$5.75(10^{-3})$ grams per cubic meter (g/m^3)] was used. Concentration of CO in the exhaust vent is predicted to be 21.01 ppm for the 1-hour period.

For near-field receptors such as those being considered, ambient concentrations were scaled from the ventilation air concentration using Halitsky's empirical model for gas diffusion near buildings. This model states that the ambient concentration X_a is:

$$X_a = X/D$$

where: D = $2.22M [3.16 + 0.1(S)/(A_e)^{1/2}]^2 (V/V_e)$
 M = building configuration factor, 4.0
 S = shortest distance from source to receptor
 A_e = area of exhaust opening, 3.72 square meters (m^2)
 V = ambient wind velocity, 1.0 meters per second (m/s)
 V_e = source exit velocity, 4.82 m/s

Eight hour impacts of the garage were estimated using the DEP recommended one-hour to eight-hour persistence factor of 0.7.

7.4.3 Results

The following maximum garage impacts were determined for the three receptor sites examined:

		<u>AM Peak</u>	
	<u>S (m)</u>	<u>1-hour</u>	<u>8-hour</u>
Edge of Omni Parker House adjacent to Tremont Temple	18.59	0.67 ppm	0.47 ppm
Directly Below Estimated Exhaust Location	3.66	1.02 ppm	0.71 ppm
Corner of Tremont and Bosworth Streets	50.29	0.34 ppm	0.23 ppm

At all three receptors considered, the predicted contribution of the garage on pedestrian level air quality and on adjacent structures is less than 1.1 ppm and 0.8 ppm for the one- and eight-hour periods respectively.

7.4.4 Mitigation of Air Quality Impacts

The Tremont Temple/90 Tremont Street garage is a valet-operated facility. Therefore, air quality impacts can be minimized as valets will be aware of the location of open parking spaces. In addition, the elevator limits the number of exiting vehicles thereby decreasing the possibility of vehicle queuing in the PM. Should a queue form in the AM peak period, vehicles could be turned off in the alley entrance to the garage until they can be parked.

7.5 Geotechnical and Groundwater

7.5.1 Subsoil Conditions

Based on available geological data and on subsurface explorations in the immediate area, generalized subsurface soil and rock types are as discussed below in increasing order of depth below existing ground surface.

Miscellaneous granular fill associated with building and utility construction is anticipated to depths of about 15 feet. The composition is highly variable but typically consists of compact gravel, sand and silt mixed with wood, cinders, concrete and other miscellaneous materials.

Underlying the fill are interfingering deposits of glacial

till and glacio-marine silt associated with the flank of Beacon Hill. Both deposits are very dense with standard penetration resistances typically in excess of 100 blows per foot.

These very dense glacial soils are underlain by argillitic bedrock at depths of approximately 70 to 80 feet. Typically, the argillite is a steeply-bedded shale-like rock of quite variable quality.

7.5.2 Groundwater

Based on other geotechnical work conducted in the area, groundwater is at approximately Elevation +15 (Boston City Base), corresponding to a depth of about 45 feet below existing ground surface. Groundwater levels also vary due to environmental factors including precipitation, temperature and change in the season.

7.5.3 Structures On-Site

Approximately two-thirds of the development site is occupied by the 1894 Tremont Temple at 88 Tremont Street which is an 8-story, masonry clad, steel frame building with a basement and partial sub-basement. The Temple is to remain and to undergo a facade restoration and an interior renovation program.

The abutting parcel at 90 Tremont Street (Dini's Restaurant) is occupied by the two-story remains of two narrow brick buildings (formerly 4 and 5-stories) with single level basements. These structures are to be demolished.

7.5.4 Adjacent Below-Grade Structures

The MBTA Green line tunnel is a reinforced concrete structure of "cut-and-cover" construction located at a relatively shallow depth below Tremont Street.

Further, the site is abutted on the north and east sides by the 10-story Parker House and also by a 2-story structure belonging to the Parker House. These adjacent structures have single basements and limited sub-basements.

7.5.5 Foundation Design

Foundation support of the new 16-story building with two levels of below-grade parking at 90 Tremont Street is anticipated to be by means of conventional footings with a high bearing pressure in consideration of the excellent bearing qualities of the glacial soils underlying the site.

Although the lowest level parking slab is approximately 25 feet above the groundwater level, an underdrain system is



expected to be installed to protect the foundation wells and lowest slab against incidental trapped or perched water given the impermeability of the glacial soils.

The air rights structure over the Tremont Temple would be supported by the foundations of the new 16-story building as well as new major columns near the north property line supported on hand-excavated pier foundations installed in an underpinning fashion.

7.5.6 Foundation Construction Methodology

Construction of the two levels of below-grade parking at 90 Tremont Street requires an approximately 20-foot deep excavation measuring about 70 feet by 120 feet in plan dimensions. Excavation would be by means of conventional earth excavation equipment, namely hydraulic backhoe, which would directly load the excavated soil into trucks.

Proper protection of Tremont and Bosworth Streets and their utilities is anticipated to be provided by an earth support system consisting of braced soldier piles and lagging. The MBTA Green line tunnel is sufficiently removed from the property line to be essentially unaffected by the braced excavation; however, the presence of the tunnel does preclude the use of tiebacks under Tremont Street.

The proposed excavation is adjacent to and somewhat below the foundations of both the Tremont Temple and the Parker House. Depending upon the final foundation design, temporary supports will be designed in consultation with the Geotechnical Engineer to support the adjacent buildings and streets while the new foundation is being excavated. Typically, this will consist of any one, or a combination of soldier piles and lagging, or underpinning. All of these methods, standard practices, are designed by the Engineers specifically for the adjacent structures at each side of the site, and installed under strict control and supervision by the Geotechnical Engineer. They are continuously monitored during the foundation phase of construction to insure no adverse movements.

The soldier piles will be placed in holes pre-drilled in the earth so as not to cause undue vibrations to adjacent structures. As these systems are installed, the excavation proceeds incrementally with the proper bracing being installed to ensure continuous support throughout.

7.5.7 Foundation Construction Mitigation Measures

Measures that are expected to be employed to prevent and mitigate potentially adverse effects of the proposed below-grade construction fall into four general categories:

- a) Preventive design
- b) Construction performance criteria
- c) Monitoring during and after construction
- d) Predetermined mitigation measures

The excavation procedures, lateral support system, and underpinning system will be designed to prevent adverse effects in consideration of the sensitive nature of nearby structures. Specific performance criteria will be incorporated into the contract documents for construction of the Project. The contractor and the Proponent's geotechnical engineer will monitor excavation performance for early detection of movements. The monitoring is to enable implementation of mitigation measures, if necessary, before adverse effects can result.

Specific performance criteria will be imposed on the contractor during excavation and below-grade construction. The Proponent will require that the excavation and adjacent structures be monitored to specifically prohibit inappropriate construction practices which are known to contributed to unfavorable performance. The project specifications will include criteria for undertaking remedial measures if movement of the lateral support system or underpinning system exceeds a specified limit.

The proponent's geotechnical engineer will review the contractor's design submittals for the lateral earth support and underpinning systems of conformance to the criteria and specified performance requirements. Revisions will be recommended and implemented as necessary, to achieve conformance.

Full-time on-site monitoring of the contractor's construction activities will be provided by the Proponent's geotechnical engineer until the below-grade portions of the structure are completed. This will provide for independent monitoring of the contractor's compliance with the project specifications, and will enable early notification and correction of on-site problems.

The Project Proponent will also install and monitor appropriate survey points and geotechnical instrumentation to document the performance of the excavation and effects on nearby facilities. Such monitoring is planned to include measurements of building settlements, ground and earth support system movements, and other data. This information can provide aid in warning of unacceptable excavation performance and enable corrective procedures to be implemented.

With the design submittals, the contractor will be required to provide contingency procedures to be reviewed by the Proponent's design team prior to constructions and

undertaken in the event of excessive excavation movement. Such measures might include altering the excavation procedure or installation of additional bracing. In addition, the Proponent will maintain ongoing contact and consultation with officials of the Boston Water and Sewer Commission and of the MBTA in order to ensure that the facilities of these agencies remain unaffected by construction activity. These procedures are consistent with accepted construction practice.

Since the groundwater level is considerably below the proposed excavation depth, groundwater effects are not a consideration.

7.5.8 Excavation Disposal

The excavated material is generally not suitable for subsequent reuse on-site and, hence, will be disposed of off-site. An estimated 7,000 cubic yards of excavated material will be removed from the site and disposed of in accordance with the Commonwealth of Massachusetts solid fill requirements.

7.6 Noise

The project area experiences fairly high noise levels typical of an urban environment. Specifically, noise in the project area is created by motor vehicle traffic on local streets, by building mechanical systems, and by construction activities.

Although the uses envisioned for the Proposed Project are not likely to cause an appreciable increase in the ambient noise level, the building design will incorporate noise attenuation measures. The design of the project has not yet progressed to the point where the final location and type of mechanical equipment is known, however the 90 Tremont Street rooftop penthouse, the truss level atop Tremont Temple's roof and the Temple's sub-basement are being considered for mechanical space.

As is typical of large office buildings, some noise is expected to be produced by the building mechanical systems (heating, ventilation, and air-conditioning; or HVAC). Generally, much of this equipment is hidden in mechanical equipment rooms, above ceilings, or in walls or enclosures. The noise generated by building equipment hidden from view can generally be sufficiently attenuated through the proper use of architectural techniques. Almost all the structures surrounding the project area contain HVAC systems. Mechanical equipment for the Tremont Temple/90 Tremont Street project is anticipated to be located such that sufficient physical and structural separation exists between the equipment and building occupants, exterior open spaces,

and pedestrians. Location and design of mechanical rooms will serve to mitigate potential noise impacts associated with HVAC equipment.

Architectural plans for the proposed Tremont Temple/90 Tremont Street project have not progressed to the point where the locations of mechanical systems relative to exterior exposures are set. However, all exterior equipment, such as exhaust and intake vents, will be located at a sufficient distance from outdoor open areas to allow for attenuation of HVAC noise to background levels. It is anticipated that HVAC and other mechanical systems will be placed to minimize impacts upon the Parker House Hotel and the Bosworth Street pedestrian improvements.

7.7 Construction Impacts

7.7.1 Construction Management Plan

A final Construction Management Plan (Traffic Management Plan) will be submitted to the Boston Transportation Department (BTD) for approval prior to the actual start of construction. The plan will be in compliance with the Boston Transportation Department & Construction Management Program and the Draft Project Impact Report. The designated contractor of the Applicant will be bound by the agreement.

The purpose of the Construction Impacts section is to describe the procedures to be taken to mitigate the construction impact of the project upon the adjacent neighborhood residences and businesses.

7.7.2 Construction Schedule

Construction work hours will generally be limited to weekdays between 7:00 AM and 3:30 PM. If overtime is required, it will generally be between 3:30 PM to 5:30 PM. Overtime which exceeds these hours will be coordinated with the proper committees and neighborhood associations. The construction period for the proposed Tremont Temple/90 Tremont Street project is expected to last 18 to 24 months.

7.7.3 Construction Worker Parking and Construction Staging

Parking will not be made available to the construction workers at the site. Only construction vehicles or equipment necessary in the performance of the work will be allowed on the site. It is anticipated that space to store equipment on site will be provided to make it easier to arrive at the site by public transportation.

Best efforts will be maintained to minimize construction related truck movement between 7:30 AM to 9:00 AM and between 4:00 PM to 6:00 PM. When this becomes less feasible



during demolition, excavation, and concrete placement, staging areas will be established off site with trucks and materials being dispatched by radios to minimize idling near the site. The provision of appropriate staging will be made a part of the subcontractor's agreements.

7.7.4 Truck Access Routes and Truck Volumes

It is anticipated that traffic to and from the site will be restricted to Tremont Street, Bosworth Street to and from Tremont Street, and will follow the existing one way street patterns approaching Tremont Street, from Cambridge Street, Bowdoin Square and possibly Court Street. Trucks will proceed down Tremont Street to Stuart Street and Kneeland Street to access the Central Artery and the Massachusetts Turnpike. Specific truck routes will be determined with the Boston Transportation Department. The entrance and exit gate for construction truck traffic will be on Bosworth Street. It is anticipated that the largest volume of truck traffic will occur during the excavation phase of the project with volumes varying from approximately 60 to 70 truck trips per day over a four month period. As described earlier, during excavation, staging areas will be established off-site with trucks being dispatched by radios to minimize idling near the site.

Access for business and public safety vehicles will be maintained on Bosworth Street. If such access is unavoidably disrupted, 48 hours prior notice will be given to abutters and the proper local authorities.

7.7.5 Potential Air Quality Impacts

Project-related air quality impacts are anticipated to be limited to emissions of fugitive dust during the demolition construction periods and are expected to be minimal. Pollution generated from construction-related traffic and construction machinery should be minor and not result in any adverse impact to air quality. Impacts associated with demolition, land clearing, ground excavation, cut-and-fill operations, and other construction activities may generate fugitive dust, which will result in localized increases in airborne particulate levels. Fugitive dust emissions from construction activities will depend on such factors as the properties of the emitting surfaces (e.g., soil silt content, moisture content, and volume of spoils), meteorological variables, and construction practices employed.

7.7.6 Air Quality Mitigation

To reduce emissions of fugitive dust and minimize impacts on the local environment, a number of strictly enforced mitigation measures will be adhered to. These include:

- o Using wetting agents on areas of exposed soil and demolition activities on a scheduled basis.
- o Using covered trucks for transportation of excavated material and demolition debris.
- o Minimizing storage of debris on-site.
- o Locating aggregate storage piles away from areas having the greatest pedestrian activity.
- o Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized.
- o Street cleaning around the site perimeter on a daily basis to minimize dust accumulations.

7.7.7 Construction Noise Impacts

Construction noise at the proposed Tremont Temple/90 Tremont Street site will be similar to noise at other downtown construction sites. Construction activities will result in the creation of temporary noise and vibration impacts, as a result of the operation of construction equipment on-site and limited traffic to and from the construction site. Actual noise levels will depend on such factors as the location of the work and the choice of equipment used. Noise generated by construction truck traffic will be temporary and variable in nature. To a large extent, this noise will be masked by high ambient noise levels.

There are a number of measures which can be taken to mitigate noise at the proposed Tremont Temple/90 Tremont Street construction site, including:

- o Using appropriate mufflers on all equipment.
- o Installing enclosures around the work area where stationary equipment is being used.
- o Replacing specific construction operations and techniques by less noisy ones - e.g., using welding instead of riveting and mixing concrete off-site instead of on-site.
- o Selecting the quietest of alternate items of equipment - e.g., electric instead of diesel-powered equipment, hydraulic tools instead of pneumatic impact tools.
- o Scheduling equipment operations to keep average levels low, to synchronize noisiest operations with times of highest ambient levels, and to maintain relatively

uniform noise levels.

- o Turning off idling equipment.
- o Locating noisy equipment as far as possible from sensitive areas.

With the use of appropriate mitigative measures, a reduction in construction noise levels of 5 to 10 dBA can be achieved. A plywood fence, if necessary, to shield the neighborhood from dust and noise, will be erected.

7.7.8 Demolition

The demolition of the existing building will be done during normal working hours using conventional methods. The existing brick and masonry will be demolished with a headache ball and it is anticipated that the steel will be cut in sections and pieces lifted by crane. The demolition contractor will be required to hose down or otherwise minimize dust emissions from the project and to dispose of the debris in authorized disposal areas. These disposal areas will be established at the time of awarding the subcontract for the demolition work.

The site perimeter and adjoining streets will be monitored daily against the accumulation of refuse and debris resulting from construction and demolition. A monthly Rodent Control Program will be in place at the site during construction.

7.8 Solid and Hazardous Wastes

7.8.1 Potential for the Existence of Contaminated Soil or Groundwater

As documented in Appendix C, Preliminary Assessment Report, the current site usage consists of a church, office space, retail shop and restaurant while the former usage consisted of a theater, office space and numerous shops (e.g. dress, hat, piano and florist). None of the above is considered a potential source of contamination of the soil or groundwater at the site.

Further, based on our visual inspection of the buildings currently occupying the site, on our records search at numerous City of Boston and State offices (Building Departments, Fire Department, Assessors Office, Health Department, Environmental Office, Boston Redevelopment Authority, Historical Office, Boston Public Library, Bostonian Library, Insurance Library and Department of Public Works), and on our records search at the offices of the Massachusetts Department of Environmental Protection, there is no indication of a release or threat of release of

oil or hazardous materials at the site or nearby which could impact the site pursuant to the MGL Chapter 21E and the Massachusetts Contingency Plan (310 CMR 40.00).

Further subsurface explorations and chemical testing of soil and groundwater samples are to be undertaken in the near future to further assess the quality of subsurface soils and groundwater at the site.

However, based on very recent experience with the stringent criteria of the recently enacted DEP "Management Procedures for Excavated Soils Contaminated with Virgin Petroleum Oils (Policy #wac-89-001)" dated June 30, 1989, it is anticipated that some low-level petroleum product contamination, ubiquitous in urban fill soils, may be encountered which would necessitate limited off-site disposal of soil in accordance with the above-referenced policy.

7.8.2 Construction Waste

Demolition Debris: The only initial demolition work for the proposed Tremont Temple/90 Tremont Street project will occur on the existing Dini's site at 90 Tremont Street and is expected to last approximately three to four weeks. During demolition of this portion of the site, 50-55 trucks of demolition debris will be removed daily from the site. The project will generate approximately 1,000-1,200 cubic yards of demolition debris. Concurrent with constructing the foundation for the 90 Tremont Street component, portions of the south wall in the Temple's first basement will be removed to allow for the planned parking level. Upon completion of 90 Tremont Street's lower floors and prior to construction and installation of the truss atop the Temple roof, its existing 2,025 square foot penthouse will be removed. All construction debris will consist primarily of non-contaminated steel, concrete, brick and terra cotta.

Asbestos Removal: An asbestos abatement program will be initiated by the Applicant allowing for the detection and removal of any asbestos prior to the start of demolition. A licensed asbestos removal contractor will be under agreement to the Partnership to remove and dispose of any asbestos found, most likely only in the form of pipe insulation and surface mounted ceiling and floor tiles. The asbestos will be disposed of in accordance with applicable state and local regulations.

Debris Composition and Disposal Sites: The disposal options for demolition debris depend upon the materials to be disposed of and the current regulatory constraints. Two types of debris will be removed from the site: hazardous and non-contaminated debris. The hazardous debris, limited only to surface-applied asbestos, will be removed prior to demolition. As described previously, any contaminated waste

will be handled and disposed of by a licensed contractor in an approved landfill in accordance with all applicable State and local regulations.

The bulk of the construction debris will consist of non-contaminated steel, concrete, brick and terra cotta. Some of the steel may be salvaged, and the rest will be removed by the contractor. The masonry waste will be disposed of in an approved landfill under the authority of the contractor. To prevent the accumulation of debris on-site, disposal of debris will be carried out while the demolition is occurring. The naming of specific sites for disposal is premature at this time since conditions and available disposal sites may change prior to the start of construction. The demolition contractor will, however, assume full responsibility for disposing the debris efficiently and appropriately in accordance with applicable regulations.

7.8.3 Operational Waste

Upon completion of construction, solid waste generated by the proposed Tremont Temple/90 Tremont Street project will increase as a result of new retail and office space. Waste from restaurant space will decrease because of the loss of Dini's, which occupies more floor area than will the proposed new restaurant. The estimated operational waste from the proposed office, retail, and restaurant space is based on current rates of waste generation at other Boston office buildings, and restaurants, and assuming similar rates for the space at Tremont Temple/90 Tremont Street. The solid waste generated by the operation of the proposed Tremont Temple/90 Tremont Street project will be removed from the dumpster/loading area by independent contractors.

Existing Waste Generation: Solid waste generated by the existing Tremont Temple is currently removed by private trash collectors. The trash is stored in the building overnight and the contractor picks up the trash early in the morning six times per week from the loading dock. The Temple disposes of 10 to 15 48 gallon trash bags per day. The trash is primarily paper products and is generated by the office space and school. Food trash generated by occasional Sunday evening dinners is disposed of in the same manner as the paper trash. The existing Dini's Restaurant at 90 Tremont Street generates approximately 400 pounds of paper trash per day. The trash is picked up each day, Monday through Saturday. The food waste goes through a meat grinder type instrument and is fed directly into the sewer system. Solid waste generated by Tremont Temple, Dini's Restaurant and downtown office buildings is shown in Table 7.8-1.

Impacts of Proposed Project: Table 7.8-2 indicates by use

the estimated solid waste generated by the proposed Tremont Temple/90 Tremont Street project. The additional solid waste produced by the proposed Tremont Temple/90 Tremont Street project is estimated at 129.12 tons per year. The estimate is based on existing generation rates at Dini's, the Temple, and downtown office buildings and the estimates for the proposed Tremont Temple/90 Tremont Street project.

TABLE 7.8-1

SOLID WASTE GENERATED BY THE TREMONT TEMPLE,
DINI'S, AND DOWNTOWN OFFICE BUILDINGS

<u>Use</u>	<u>Area</u> GSF	<u>Solid Wastes</u> tons/year	<u>Estimated Annual</u> <u>Generation Rate</u> tons/1,000 sf/year
Restaurant	6,500	62	9.54
Office	1,000,000	1,330	1.33
Retail	6,500	36	5.5
Tremont Temple	77,500	187	2.41

TABLE 7.8-2

PROJECTED SOLID WASTE GENERATION OF PROPOSED PROJECT

<u>Use</u>	<u>Net New</u> <u>Area</u> GSF	<u>Estimated Annual</u> <u>Generation Rate</u> tons/1,000 sf/year	<u>Additional</u> <u>Solid Wastes</u> tons/year
Restaurant	(3,000)	9.54	(28.62)
Office	140,400	1.33	186.73
Retail	(4,000)	5.5	(22.00)
Tremont Temple	(2,900)	2.41	<u>(6.99)</u>
			129.12

Rodent Control

The City of Boston has declared that the infestation of rodents in the City is a serious problem. In order to control this infestation, the City has established requirements under the Massachusetts State Sanitary Code, Chapter II, 105 CMR 410.550 and the State Building Code, Section 108.6. Policy Number 87-4 establishes that extermination of rodents shall be required for issuance of permits for demolition, excavation, foundation, and basement rehabilitation.

Presently, Tremont Temple has minimal rodent control problems and requires only periodic extermination. The rodent control program will be updated and expanded to accommodate the added impacts from proposed demolition and construction at the proposed Tremont Temple/90 Tremont Street project with the help of a licensed exterminator prior to beginning any work on the project. Upon completion of the proposed project, the Applicant will conduct periodic inspections and if the leased space has not been properly exterminated, it is anticipated that the Applicant will exterminate. An annual certification by the lessees and their exterminator will be required by the Applicant to ensure the consistent and proper extermination of the retail, restaurant, and office space. Licensed and certified pest control operators will carry out the extermination.

A rodent extermination certificate will be filed with the building permit application to the City. Rodent inspection, monitoring, and treatment will be carried out before, during, and at the completion of all foundation work for the proposed project, in compliance with the City's requirements. Rodent extermination prior to work start-up will consist of treatment of areas throughout the project area, including alleyways, surrounding building exteriors, and building interiors. During the construction process, regular service visits will be made in order to maintain effective rodent control levels.

8.1 Introduction

The proposed Tremont Temple/90 Tremont Street project includes the renovation of the existing Tremont Temple as well as the construction of a 16 story office building on the 90 - 98 Tremont Street parcel. The proposed office building will also occupy the air rights over the existing Temple. The Proposed Project will include new office, retail, child care and restaurant space as well as the Temple's existing Church and cultural uses.

The proposed Tremont Temple/90 Tremont Street project will impact various local infrastructure systems. The Infrastructure Systems Component was prepared to identify and evaluate the impact issues and present mitigation measures. The impacts of the proposed Tremont Temple/90 Tremont Street project on the following systems are addressed:

- Water Distribution
- Wastewater Disposal
- Storm Drainage
- Electric Service
- Steam Service
- Natural Gas Service
- Telecommunications

The Infrastructure Systems Component section describes the existing systems and their capacity to serve the Proposed Project. Expected utility use levels for each infrastructure element are presented and estimates are made for the increased demands associated with each space category in the Proposed Project. For each infrastructure element, the impact of the increased demands on the system is described and service connection information is provided. Planned mitigation measures to moderate the impact of the project are also presented. Also included, is a summary of other planned projects in the Midtown Cultural District with utility use estimates for these projects and the relative impact of the Tremont Temple/90 Tremont Street project with respect to the anticipated development in the District.

The infrastructure impact analysis for the Proposed Project is primarily based on characteristic utility demand projections. All results of calculations estimating existing and new levels of use assume full occupancy conditions.

8.2 Water Distribution Systems

Included in the Water Distribution Systems section is an analysis of the proposed Tremont Temple/90 Tremont Street

project's anticipated impacts on existing water supply facilities. The analysis includes a description of existing facilities, an estimate of the Proposed Project's water supply requirements, and an evaluation of the supply facilities' adequacy to handle the increased demand.

8.2.1 Description of Existing Water Supply Facilities

Existing water service for domestic use and fire protection in the project vicinity is supplied from water distribution systems owned and operated by the Boston Water and Sewer Commission (BWSC). These distribution systems are designated as the Southern Low Service (SLS) supply system, which generally is used to meet domestic water needs and some street hydrant demand; and the Southern High Service (SHS) water supply system, which is used to meet internal building system fire protection requirements, street hydrant demand and some domestic needs. A High Pressure Fire Service (HPFS) system also serves the project area. The HPFS system is owned by the City of Boston Fire Department and is maintained by the BWSC. The HPFS system is used for street hydrant supply only.

These water supply systems are integrally connected to form loops which allow major water demands to be met from more than one direction. This looping allows each system to function at higher efficiency for the given pipe size and provides a measure of safety and convenience in the event of a water main break.

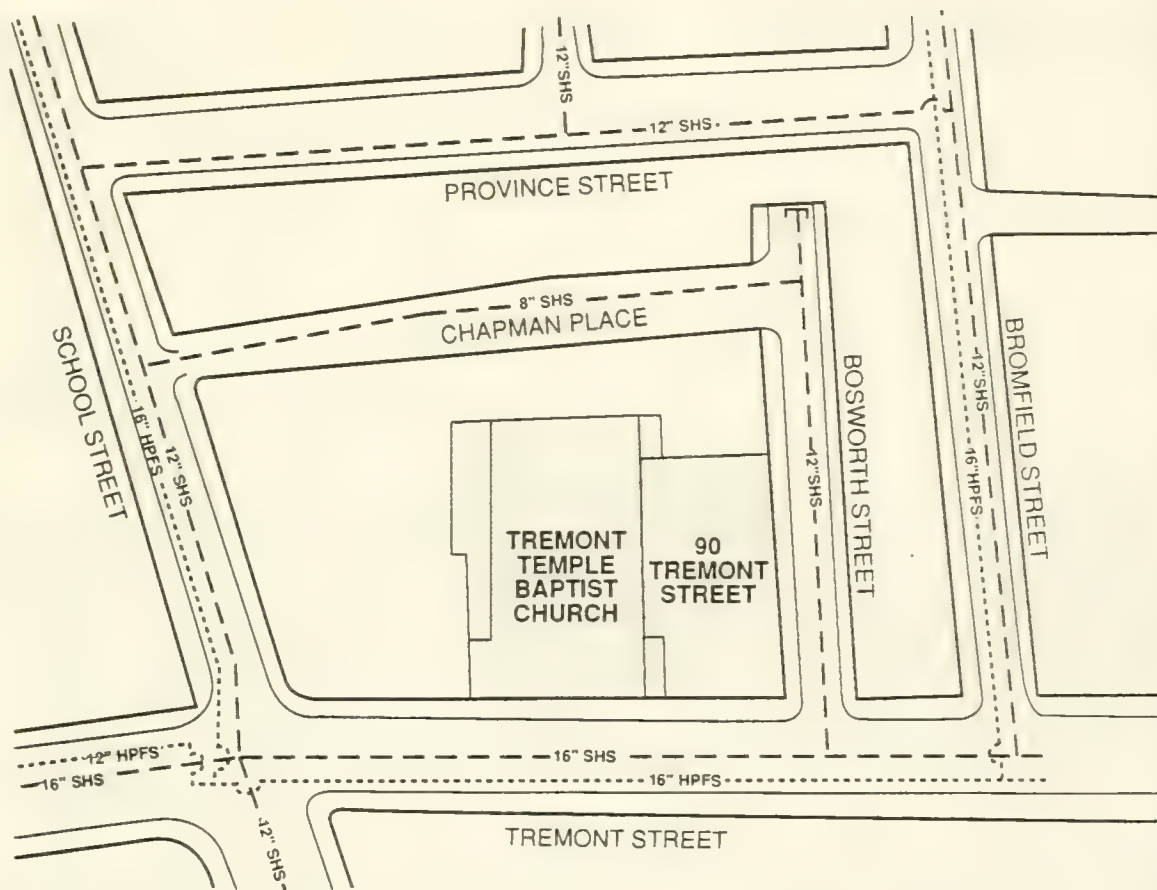
Domestic water service and fire protection is provided to the site through connections from the SHS water system located in the adjacent streets. The BWSC water distribution system in the project site vicinity is shown in Figure 8-1. The system includes a 16" SHS main on Tremont Street, a 12" SHS on Bosworth Street, and an 8" SHS line on Chapman Place. There is no SLS water system near the site. The nearest SLS is on Franklin Street, approximately 500 feet from the project site. A 16" HPFS line located on Tremont Street is also depicted in Figure 8-1.

8.2.2 Capacity of Existing Water Supply Facilities

The existing SHS system in the site vicinity has been evaluated for capacity via hydrant flow tests as summarized in Table 8-1. Flow and pressure appear to be adequate to serve the development's sanitary and fire fighting requirements.

8.2.3 Water Use

Existing Use: Average daily water use for the existing Tremont Temple and the building at 90 Tremont Street has



LEGEND

Southern High Service

.....
High Pressure Fire Service

--- 12" SHS ---
Distribution Line Size

0 90'
SCALE IN FEET

FIGURE 8-1
EXISTING WATER DISTRIBUTION SYSTEM

TABLE 8-1

HYDRANT FLOW TESTS

<u>Hydrant Test Location</u>	<u>Test Date</u>	<u>Static Pressure</u>	<u>Measured Flow at Residual Pressure</u>	Calculated Flow* at 20 psi Residual Pressure
Tremont Street, 16" SH	1/87	84 psi	2270 gpm @ 78 psi	8180 gpm
Winter Street, 12" SH	1/88	75 psi	2889 gpm @ 65 psi	7279 gpm
Tremont Street, 16" SH	7/89	67 psi	2418 gpm @ 55 psi	5054 gpm

* All values from BWSC records.

been estimated based on Title 5* values. This information is presented in Table 8-2 and is categorized by current use. Peak use values were determined using a peaking factor of three. It should be noted that the estimated peak air conditioning cooling tower makeup water use of 5,710 gallons per day (gpd) is a seasonal demand. Average domestic use is estimated to be approximately 20,705 gpd with an instantaneous peak of 43 gallons per minute (gpm). This results in an average total use in summer, under peak cooling conditions, of 26,415 gpd and a total instantaneous peak of 47 gpm.

Proposed Project: Table 8-3 summarizes water use for the total floor space in the completed project. The total average domestic water demand of the completed project has been estimated to be 26,146 gpd. Applying a peaking factor of 3 results in an instantaneous peak domestic water demand of 54 gpm. Peak air conditioning cooling tower makeup is estimated to be 18,083 gpd during summer months. This results in an average total use in summer, under peak cooling conditions, of 44,229 gpd with an instantaneous peak of 67 gpm.

* Massachusetts DEQE, 310 CMR 15.00, State Environmental Code, Title 5, Sewage Flow Estimates.

TABLE 8-2

AVERAGE DAILY WATER USE FOR EXISTING STRUCTURES
(DOMESTIC USE BASED ON TITLE 5 DATA)

<u>Structure</u>	<u>Use Category</u>	<u>Average Area (gsf)</u>	<u>Peak Domestic (gpd)</u>	<u>Total Cooling* (gpd)</u>	<u>Use (gpd)</u>
Tremont Temple	Auditorium**	44,200	6,750	4,000	10,750
	Office***	33,300	2,500	750	3,250
90 Tremont Street	Restaurant	6,500	11,130	480	11,610
	Retail	<u>6,500</u>	<u>325</u>	<u>480</u>	<u>805</u>
TOTALS		90,500	20,705	5,710	26,415

TABLE 8-3

AVERAGE DAILY WATER USE FOR THE PROPOSED PROJECT
(DOMESTIC USE BASED ON TITLE 5 DATA)

<u>Structure</u>	<u>Use Category</u>	<u>Area (gsf)</u>	<u>Average Domestic (gpd)</u>	<u>Peak Cooling* (gpd)</u>	<u>Total Use (gpd)</u>
Tremont Temple	Auditorium**	40,500	6,450	3,705	10,155
	Office***	30,100	2,258	2,408	4,666
	Child Care	4,000	670	328	998
90 Tremont Street	Office	140,400	10,530	11,232	21,762
	Restaurant	3,500	6,125	287	6,412
	Retail	<u>1,500</u>	<u>113</u>	<u>123</u>	<u>236</u>
TOTAL		220,000	261,461	8,083	44,229

* Summertime use only.

** Includes auditorium, function halls and church use.

*** Includes church offices, Sunday school rooms, practice rooms and various other uses.

The results of the water use analysis show that the Proposed Project will increase domestic water use by 5,441 gpd. The relatively minor increase in domestic water use is due to the reduction in restaurant space. Restaurants are major water users requiring approximately 1,700 gallons per 1,000 square feet of space, whereas office space uses only 75 gallons per 1,000 square feet. Peak air conditioning cooling tower makeup is expected to increase by 12,373 gpd during summer months.

The minimum fire flow requirements based on the proposed project are 2,000 gpm at 20 pounds per square inch (psi) residual pressure.

8.2.4 System Impacts

The Proposed Project will be responsible for a maximum increase in water use of approximately 17,814 gpd under peak summer conditions. This represents an increase of 67% over existing water use. This estimated requirement will be moderated by the effects of water conservation components factored into the building design. The anticipated increase in water consumption will be significantly less during the winter heating season when air conditioning cooling tower makeup water is not a factor.

The existing SHS distribution system is adequate to satisfy the project demand. This is supported by the most recent hydrant test data presented in Section 8.2.2. For an instantaneous peak domestic demand of 67 gpm, the existing SHS has an excess capacity of 2,418 gpm at 55 psi. For a fire flow requirement of approximately 2,000 gpm, the existing SHS lines have an excess capacity of 5,054 gpm at 20 psi.

8.2.5 System Connections

The only water lines available to serve the site are SHS lines, therefore, both domestic and fire protection service connections will have to tie into these lines. The exact locations of the service connections have not been determined. These locations will be coordinated with the BWSC to minimize system impacts, traffic impacts and to provide the optimum supply scenario for the development.

8.2.6 Mitigation Measures

The MWRA and BWSC are encouraging developers to implement aggressive water conservation measures in new developments. This project will meet all applicable code requirements for the installation of low flow equipment and will be willing to coordinate with the MWRA and BWSC to further reduce the consumption of water.

8.3 Sewer and Storm Drain Systems

8.3.1 Description of Existing Facilities

As shown in Figures 8-2 and 8-3, the project site is serviced by a combined sewer system owned and operated by the BWSC. The combined sewer system in downtown Boston conveys both sanitary sewage and storm drainage to the North Branch of the East Side Interceptor (ESI). The North Branch of the ESI transports dry weather flows and some wet weather flows from the Financial District, the Waterfront and the North End to the new Boston Main Interceptor (BMI). The new BMI discharges to the Massachusetts Water Resource Authority (MWRA) system at the Columbus Park Headworks. From there, the Boston Main Drainage Tunnel conveys flows to the Deer Island Treatment Plant. At Deer Island, wastewater currently receives primary treatment and chlorination before discharging to Boston Harbor at President Roads.

Figure 8-3 shows that the project site is potentially served by the head end of two combined sewer systems. The first system flows from manhole (MH) 142 on Tremont Street down Bromfield Street, Washington Street, Summer Street, and Purchase Street where it joins the ESI in the vicinity of Oliver Street. The second system takes a more northerly route originating at MH 74 in Chapman Place and flowing down School Street, Washington Street, Water Street, Kilby Street, and Central Street joining the ESI on Milk Street.

The storm drainage system serving the proposed site area is made up of the combined sewer portions of the sanitary system previously described. There is presently no separate storm drainage system in the vicinity of the site.

8.3.2 Capacity of Existing Facilities

Project Site Area Tributary to East Side Interceptor: A capacity evaluation has been conducted for the combined sewer routes previously discussed. The results of these analyses are shown in Tables 8-4 and 8-5. The approximate capacity of each sewer segment has been calculated based on the Manning equation and sewer sizes, manhole invert elevations and segment length data taken from BWSC wastewater system maps.

● Alternative 1 - Tremont Street

The capacity of this route has been determined as shown in Table 8-4. The Tremont Street option begins with a 24" x 27" sewer which runs from MH 142 to MH 141 located at the intersection of Tremont Street and Bromfield Street (slope unknown). This line continues as a 24" x 27" sewer down Bromfield Street to Washington Street where it connects to an 18" diameter pipe. The 18" line flows down Washington

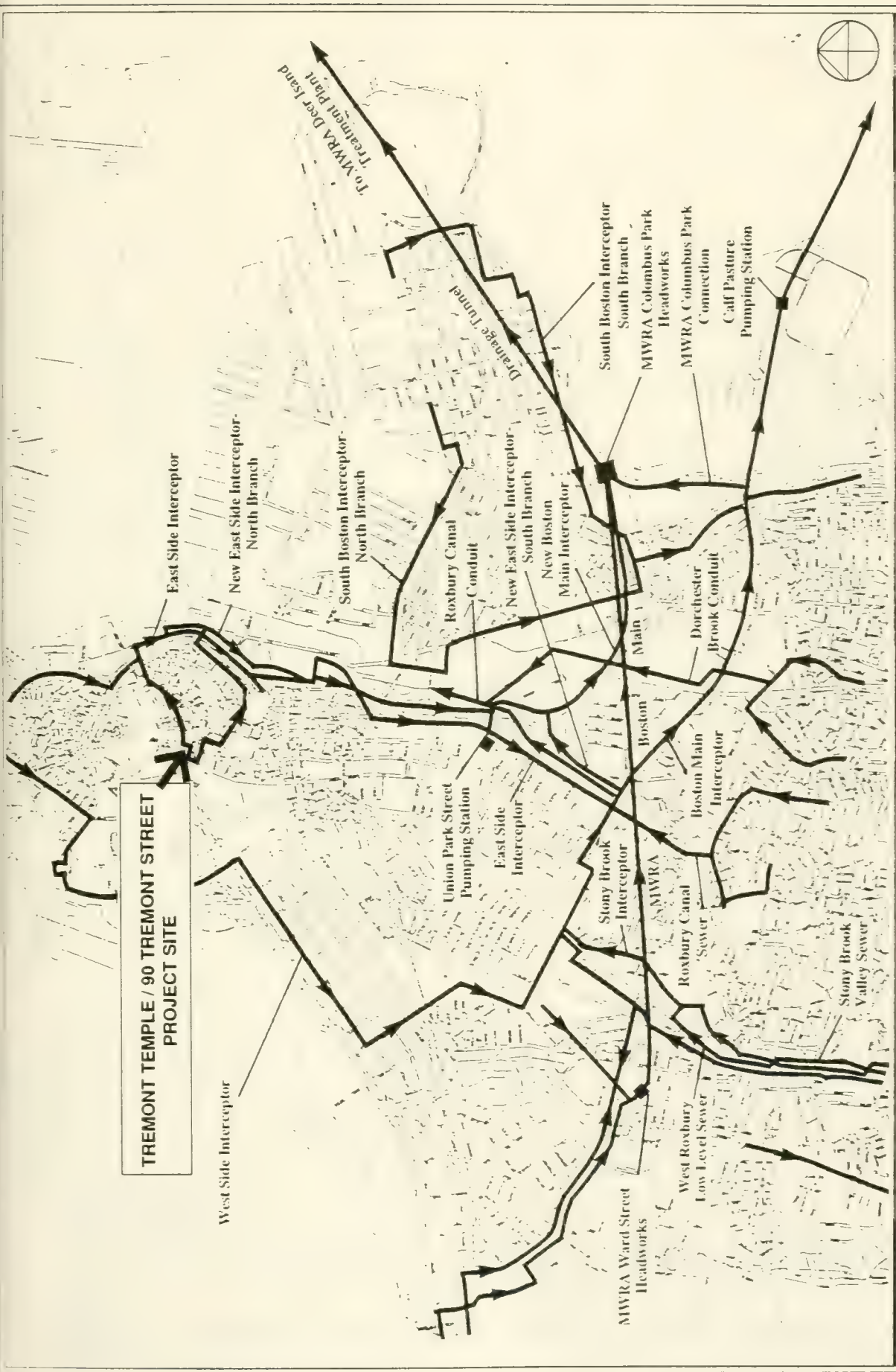


FIGURE 8-2
MAJOR INTERCEPTORS, SANITARY SEWER AND STORM DRAIN SYSTEMS

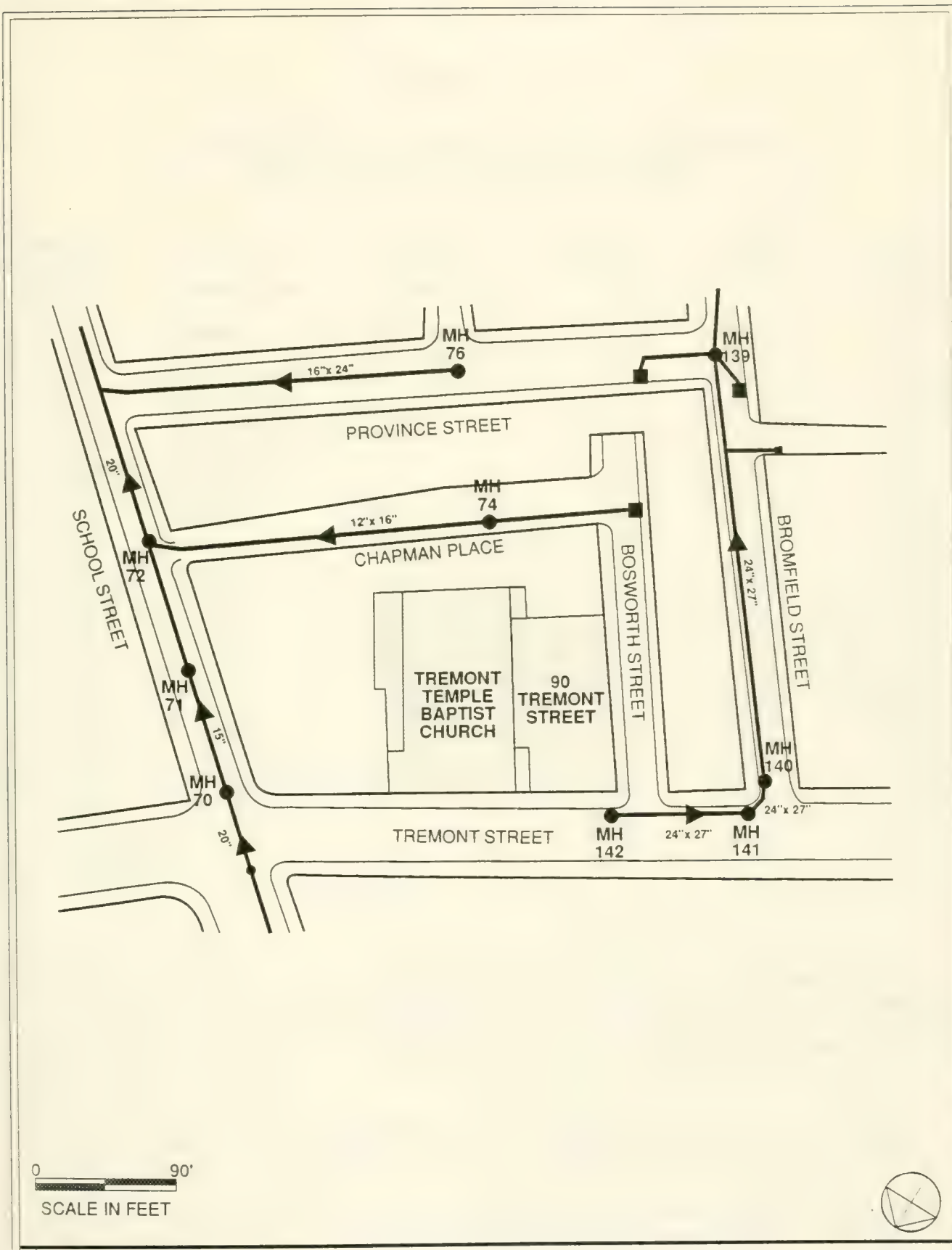


FIGURE 8-3

EXISTING SEWERS AND STORM DRAINS IN THE PROJECT VICINITY

TABLE 8-4

90 TREMONT STREET SEWER CAPACITY EVALUATION*
(ALTERNATIVE 1 - TREMONT STREET)

<u>Segment Manhole to Manhole</u>	<u>Sewer Street Name</u>	<u>Segment Size (in)</u>	<u>Length (ft)</u>	<u>Slope (ft/ft)</u>	<u>Capacity (MGD)</u>
142 - 141	Tremont	24 x 27 (24)**	105	0.0220***	18.84
141 - 140	Tremont	24 x 27 (24)**	35	0.0220***	18.84
140 - 139	Bromfield	24 x 27 (24)**	280	0.0220***	18.84
139 - 138	Bromfield	24 x 27 (24)**	225	0.0220***	18.84
138 - 137	Washington	18	175	0.0220***	8.75
137 - 136	Washington	18	215	0.0220***	8.75
136 - 399	Washington	30	30	0.0088	21.54
399 - 400	Summer	30	160	0.0088	21.54
400 - 401	Summer	24 x 45 (36)**	130	0.0088	35.03
401 - 247	Summer	24 x 45 (36)**	370	0.0008	10.66
247 - 244	Summer	36 x 47 (38)**	140	0.0019	18.95
244 - 243	Summer	36 x 47 (38)**	120	0.0019	18.95
243 - 242	Summer	42 x 51 (42)**	85	0.0008	16.37
242 - 241	Summer	42 x 51 (42)**	205	0.0008	16.37
241 - 240	Summer	42 x 51 (42)**	185	0.0008	16.37
240 - 238	Summer	42 x 51 (42)**	100	0.0010	17.86
238 - 226	Summer	42 x 51 (42)**	15	0.0067	46.23
226 - 225	Summer	48	65	0.0042	52.26
225 - 256	Purchase	72	330	0.0011	78.85
256 - 257	Purchase	72	350	0.0012	82.36
257 - 165	Purchase	72	700	0.0009	71.33
165 - ESI	Cross Artery	72	<u>190</u>	0.0219	351.85
TOTAL LENGTH			4,210		

* Manhole identification numbers, sewer sizes, invert elevations and segment lengths from BWSC wastewater system maps. Numbers 24K, 23K, 23L, 24L. Capacity calculated using Manning's Equation with a coefficient of roughness of 0.015 (fair condition brick or concrete).

** Area determined by assuming an egg-shaped section (worst case) where area = $0.510 (\text{depth})^2$ or the minimum internal dimension, whichever is greater.

*** Slopes on these sections unknown. Slopes were determined using the average slope of the ground surface between MH 142 and MH 136.

TABLE 8-5

90 TREMONT SEWER CAPACITY EVALUATION*
(ALTERNATIVE 2 - CHAPMAN PLACE)

<u>Segment Manhole to Manhole</u>	<u>Sewer Street Name</u>	<u>Segment Size (in)</u>	<u>Length (ft)</u>	<u>Slope (ft/ft)</u>	<u>Capacity (MGD)</u>
74-72	Chapman	12 x 16 (13)**	260	0.0408	5.84
72-77	School	20	250	0.0424	16.08
77-147	School	24	135	0.0052	9.15
147-151	Washington	24	155	0.0102	12.83
151-152	Washington	24	95	0.0102	12.83
152-154	Washington	20	5	0.0102	7.89
154-209	Washington	24	20	0.0150	15.55
209-211	Washington	24	160	0.0263	20.58
211- 15	Water	24	180	0.0144	15.26
215-220	Water	30 x 32 (30)**	240	0.0253	36.65
220-227	Water	48 x 68 (55)**	120	0.0042	74.87
227-228	Water	48 x 68 (55)**	180	0.0036	69.17
228-229	Kilby	50 x 72 (58)**	40	0.0043	87.08
229-235	Kilby	50 x 72 (58)**	135	0.0047	91.96
235-245	Under Ex Bldg	67	175	0.0040	124.11
245-247	Central	67	160	0.0037	119.20
247-253	Central	45 x 48 (45)**	140	0.0049	47.33
253-13	Central	45 x 48 (45)**	110	0.0020	30.36
13-12	Central	54 x 57 (54)**	15	0.0033	63.42
12-060-7	Central	54 x 57 (54)**	<u>75</u>	0.0033	63.42
TOTAL LENGTH			2,650		

* Manhole identification numbers, sewer sizes, invert elevations and segment lengths from BWSC wastewater system maps. Numbers 22K, 23L, 24L. Capacity calculated using Manning's Equation with a coefficient of roughness of 0.015 (fair condition brick or concrete).

** Area determined by assuming an egg-shaped section (worst case) where area = $0.510 (\text{depth})^2$ or the minimum internal dimension, whichever is greater.

Street to Summer Street where it combines with several other sewers which connect to a 30" sewer. This sewer line, in turn, increases to a 24" x 45" section.

Along Summer Street, the 24" x 45" sewer combines with several intersecting sewers resulting in increases to 36" x 47", 42" x 51", and 48" sewers. At the intersection of Summer Street and Purchase Street the 48" sewer connects with another 48" sewer forming a 72" line. The 72" sewer then proceeds along Purchase Street to the intersection of Oliver Street where it turns east to cross under the Central Artery. The 72" sewer joins the East Side Interceptor (ESI) in Atlantic Avenue.

The capacity of this route appears to be limited only by the regulator at the ESI. The capacity of this regulator was increased from a 15" pipe to a 24" pipe as part of the new ESI construction. This route appears to be the most likely alternative due to the proximity of the sewer to the proposed development.

o Alternative 2 - Chapman Place

This sewer route option (Table 8-5) begins on Chapman Place originating with a 12" x 16" sewer that flows towards School Street. At School Street, the sewer increases to a 20" line and again to a 24" sewer that flows towards Washington Street. The 24" line continues down Washington Street to Water Street.

On Water Street, the 24" pipe is joined by several other sewers resulting in increases in size to 30" x 32" and again to 48" x 68". At the intersection of Kilby Street, the 48" x 68" sewer is joined with a 33" x 60" sewer forming a 50" x 72" section. This sewer continues down Kilby Street and then turns east, as a 67" pipe, under an existing building between Bangs Alley and Kilby Lane. The 67" pipe continues to Central Street and changes in size to a 45" x 48" section at the intersection of Broad Street. The 45" x 48" sewer continues along Central Street and increases in size to a 54" x 57" sewer which flows into the East Side Interceptor at the intersection of Central Street and India Street.

Capacity Evaluation - East Side Interceptor (North Branch):
The north branch of the ESI (Figure 8-2) conveys dry weather and some wet weather flows from the Financial District, the Waterfront and the North End to the new BMI at the south end of the South Station Railroad Yard. The ESI has recently been replaced by the BWSC.

The new ESI has a capacity of approximately 43 million gallons per day (mgd) in the vicinity of the Financial District. This is a substantial increase from the former ESI which had a capacity of only 5 to 9 mgd.

Capacity Evaluation - Boston Main Interceptor to Deer Island: The new BMI conveys flows from the north branch of the ESI, at the south end of the South Station Railroad Yard, to the MWRA Columbus Park Headworks (Figure 8-2). The 102" BMI (peak capacity of 166 mgd) serves the new East Side Interceptor (North and South Branches), and the South Boston Interceptor (North and South Branches). The Columbus Park Headworks has a peak capacity of 182 mgd. It discharges to the Boston Main Drainage Tunnel that also serves the Ward Street Headworks (peak capacity of 256 mgd).

The Boston Main Drainage Tunnel (peak capacity of 438 mgd) discharges to the Main Pumping Station at Deer Island. The Main Pumping Station has a design peak capacity of 810 mgd, while the Treatment Plant peak design capacity is 848 mgd. During peak flows in excess of the Deer Island Plant capacity, the Columbus Park Headworks is sometimes throttled and excess flow diverted to the Calf Pasture Pump Station, on Columbia Point, which discharges to the Moon Island outlet.

8.3.3 Project Wastewater Generation

The proposed Tremont Temple/90 Tremont Street project consists of a total of 170,500 Square Feet (SF) of office space; 40,500 SF of church and cultural uses; 9,000 SF of child care, restaurant and retail uses; and an underground parking garage. The sewage generation rates have been estimated by use category based on Title 5 guidelines and appear in Tables 8-6 and 8-7.

The majority of wastewater generated by the existing and new development is domestic sewage. Two additional discharges to the BWSC sewer system include the seasonal cooling tower water blowdown generated by air conditioning system operations and steam condensate from existing steam heating systems.

Existing Wastewater Generation: Results of the analysis of existing wastewater generation are reported in Table 8-6. The domestic sewage estimates are based on Title 5 information, and the cooling blowdown and maximum steam condensate generated are based on typical mechanical engineering factors.

Total average domestic sewage discharge for the existing development was calculated to be 20,705 gpd and peak cooling to be 1,598 gpd. Peak cooling blowdown will occur only on warm summer days, whereas the sewage flow is an estimated daily average which can be expected to occur on any day during the year. The maximum steam condensate discharge of 1,630 gpd will occur during the winter season and will not be concurrent with the peak cooling blowdown.

Proposed Project: Wastewater generation information for the total development space was obtained in a similar fashion to the estimates for the existing conditions, and therefore, provides a standard base of comparison. Results of the calculations are reported in Table 8-7. Total projected domestic sewage discharge is 26,146 gpd. Blowdown from peak summer cooling is expected to total 5,171 gpd. Total peak wastewater flow, that will occur during hot summer periods, is the sum of these two amounts, 31,317 gpd. The maximum steam condensate discharge of 1,571 gpd will occur during the winter heating season when cooling system blowdown is not anticipated to occur.

TABLE 8-6

WASTEWATER GENERATION INFORMATION FOR EXISTING STRUCTURES
(DOMESTIC SEWAGE BASED ON TITLE 5 DATA)

<u>Structure</u>	<u>Use Category</u>	<u>Area (gsf)</u>	<u>Domestic Sewage (gpd)</u>	<u>Peak Cooling Blowdown (gpd)</u>	<u>Total Wastewater (gpd)</u>
Tremont Temple	Auditorium	44,200	6,750	1,120	7,870
	Office	33,300	2,500	210	2,710
90 Tremont Street	Restaurant	6,500	11,130	134	11,264
	Retail	<u>6,500</u>	<u>325</u>	<u>134</u>	<u>459</u>
TOTALS		90,500	20,705	1,598	22,303

TABLE 8-7
WASTEWATER GENERATION INFORMATION
FOR THE PROPOSED PROJECT
(DOMESTIC SEWAGE BASED ON TITLE 5 DATA)

<u>Structure</u>	<u>Use Category</u>	<u>Area (gsf)</u>	<u>Domestic Sewage (gpd)</u>	<u>Peak Cooling Blowdown (gpd)</u>	<u>Total Wastewater (gpd)</u>
Tremont Temple	Auditorium	40,500	6,450	1,037	7,487
	Office	30,100	2,258	697	2,955
	Child Care	4,000	670	92	762
90 Tremont Street	Office	140,400	10,530	3,229	13,759
	Restaurant	3,500	6,125	81	6,206
	Retail	<u>1,500</u>	<u>113</u>	<u>35</u>	<u>148</u>
TOTALS		220,000	26,146	5,1713	1,317

Since the existing site is currently fully built-up or paved, no net increase in impervious surface area is possible. Total stormwater flow from the site will, therefore, remain essentially unchanged although discharge points to the BWSC collection system may be modified to accommodate the proposed project building configuration.

8.3.4 System Impacts

The proposed net new development will contribute a maximum increase in wastewater flow of approximately an increase of 41% above existing conditions. This estimated flow does not incorporate the moderating effects of water conservation components factored into the building designs which are projected to reduce the actual flows by up to 20 percent.

Either of the sewer route options could accommodate the project's wastewater flows. This is demonstrated by analyzing the limiting segment of each sewer route. Under Alternative 1 (Tremont Street), the limiting segment of the sewer system has a capacity of 8.75 MGD between MH 138 and MH 136. The project's wastewater flows of 31,317 gpd make up approximately 0.36 percent of this sewer capacity. The limiting segment of Alternative 2 (Chapman Place) is between MH 74 and MH 72 with a capacity of 5.84 MGD. In this instance, the project's wastewater flows make up only 0.54 percent of the capacity of the sewer line. It is apparent then, that the project's flows are significantly small compared to the capacity of the sewer lines.

The ability of the existing sewer system to support the proposed Tremont Temple/90 Tremont Street project is further demonstrated by the fact that the entire East Side Interceptor (North and South Branch), with a daytime population of approximately 171,500 in a tributary area of 485 acres, has an estimated dry weather flow of 8 MGD* versus a minimum capacity of 43 MGD in the new ESI (North Branch).

The new ESI has been designed to eliminate problems with dry weather overflows (DWO) of raw sewage into the Inner Harbor [i.e., through the combined sewer overflow (CSO) relief system]. It will also serve to decrease the frequency of wet weather overflows. Previous dry weather overflows were mainly due to surcharging of the undersized and leaky old ESI. In the past, because of the condition of the sewer system, new developments were required to install holding tanks to equalize flow. However, the Tremont Temple/90 Tremont Street project will not be required to install holding tanks because it will discharge to a route that connects to the presently functional new ESI.

The local combined sewer is designed to handle both dry weather and wet weather flows. Wet weather flows are normally much higher than dry weather flows. For example, the 72" sewer on Purchase Street has a capacity of 75 mgd to handle wet weather flows, although its average dry weather flow is on the order of 1 mgd. These routes have adequate capacity and will result in the least wet weather impacts since they discharge to the upgraded new ESI.

8.3.5 System Connections

The proposed Tremont Temple/90 Tremont Street project will provide separate sanitary and storm sewer service connections. The location of these connections will be the subject of discussions with the BWSC and will be subject to their review and approval during the site plan review process. The construction of these connections will be designed to minimize impacts on adjacent streets and to ensure that adequate facilities are available to service the site.

The existing sewer connections from Tremont Temple are to remain and will be maintained at all times during the construction of the new facilities. If a conflict arises between the existing Temple connection and the proposed construction activities, the connection will be relocated out of the impact area prior to construction.

* Table 5-9, of "Volume I, Engineering Report, Combined Sewer Overflow Project, Inner Harbor Facilities Plan," prepared for MDC, prepared by O'Brien and Gere Engineers, Inc., December 1982.

8.3.6 Permitting Requirements

For new construction projects requiring connection to the sewer system, an application is made for a sewer connection permit in accordance with 324 CMR 7.00. The sewer connection application, together with a water and sewer site plan, are submitted to the BWSC, who approves and forwards the application to the Department of Environmental Protection (DEP) - Division of Water Pollution Control (DWPC). The permit application must be made ninety days prior to construction of the connection.

8.3.7 Mitigation Measures

There are several options for mitigating the impacts of new sewage generation. As mentioned previously, the Tremont Temple/90 Tremont Street project will meet all applicable code requirements for the installation of low flow fixtures, which can cut the projected water consumption and sewage generation rates used in the system evaluation by up to 20 percent.

The underground parking garage drains will be discharged via oil and sand separators designed and constructed to MWRA standards to minimize the potential of pollutants such as oil, gasoline, grease, suspended solids, etc., from entering the sewer system. The separators will be routinely monitored and maintained by the Partnership.

All restaurant facilities located within the project will have grease traps located in their sanitary discharge systems, which will be designed, built and maintained to BWSC standards.

The design and construction of proposed service connections and system modifications will be performed to the standards of the BWSC and will be subject to their review and approval. Existing sewer connections and service to the area will be maintained during construction of the new facilities. If interruptions are necessary due to construction activities, they will be scheduled so as to minimize impacts in the service area.

8.4 Energy Systems

8.4.1 Energy Use Strategies

The Tremont Temple and 90 Tremont Street parcels are currently serviced by Boston Edison Company, Boston Gas Company and Boston Thermal Energy Corporation. Electricity from Boston Edison is used for lighting, mechanical equipment and cooling. Heating requirements are satisfied by steam provided by Boston Thermal Energy. Boston Gas supplies natural gas for kitchen and restaurant uses.

For the proposed project, it is anticipated that electricity will be the main source of space heating in the 90 Tremont Street building while the Tremont Temple will continue to use steam as its source of space heating. It is also anticipated that air conditioning requirements will be met with electricity. Natural gas will continue to be relied on for food preparation. The use of steam for space heating and air conditioning in the Ninety Tremont Street building is being evaluated at this time.

8.4.2 Electric Service

The 90 Tremont Street site is provided with electric energy by the Boston Edison Company (BECO) from substation 514 located on Kingston Street. Electricity is transmitted from this substation to the 90 Tremont Street area through BECO cable networks in conduit and manhole systems located in adjacent streets. These cable networks supply electric energy at 13.8 kva to transformers located in sidewalk vaults. These transformers convert the electricity to usable levels of 120v or 208v. Following conversion, power is then metered and distributed to the end users.

Discussions with BECO representatives indicate that the existing Substation 514 has a rated capacity of 150 mva and is currently carrying a load of approximately 120 mva. BECO presently has plans to bring a new substation, located on Chatham Street adjacent to Quincy Market, on line in late 1989. This substation is planned to relieve some of the existing load from Station 514. BECO anticipates that this new capacity will enable them to adequately service the anticipated increase in electric load in the project area.*

Efforts to develop existing electric use information were based on standard estimating parameters and data from other similar structures. Annual electric use data for the existing structures is shown in Table 8-8. The annual electric use for the existing site is approximately 1.81×10^6 kwh/yr.

Electrical energy is expected to be used for heating, lighting, mechanical equipment and air conditioning in the new structure while heat will be provided by steam in the existing Tremont Temple. Information regarding annual electric use for the new development is contained in Table 8-8. The annual electrical energy consumption is estimated to be 5.13×10^6 kwh/yr for the entire development. This represents an increase of 183% over the existing uses.

* Personal communication with Mr. Paul Dardinski, Boston Edison Company, July 1989.

It is not anticipated that new distribution capacity will be required in the BECO system to meet the specific requirements of the Tremont Temple/90 Tremont Street project. BECO has indicated that by transferring existing loads from the Kingston Street substation to the new Chatham Street substation they will have adequate distribution capacity to meet the project demands.

Electric service to existing facilities will be maintained at all times during construction. This will be accomplished by either maintaining existing facilities in place, temporarily relocating facilities during construction, or replacing existing facilities with new facilities built in conjunction with the proposed project.

New service to proposed facilities will be supplied by the construction of additional electric vaults on site to transform power to meet the new loading requirements. Modifications to on-site facilities will be closely coordinated with the overall project construction schedule to minimize impacts on existing services to remain. Details of proposed modifications and implementation schedules will be coordinated throughout design and construction with Boston Edison.

Efforts to conserve energy will lead to reduced site needs. Compliance with new State Building Code requirements for items such as lighting and insulation are expected to minimize new loads.

TABLE 8-8

ANNUAL ELECTRIC USE FOR EXISTING STRUCTURES
AND PROPOSED PROJECT
(kwh/yr x 10⁶)

<u>Structure</u> <u>Use*</u>	<u>Existing</u> <u>Area (gsf)</u>	<u>Existing</u> <u>Electric</u> <u>Use</u>	<u>Proposed</u> <u>Total</u> <u>Area</u> <u>(gsf)</u>	<u>Total</u> <u>Estimated</u> <u>Electric</u>
Tremont Temple	77,500	1.55	74,600	1.64
90 Tremont Street	<u>13,000</u>	<u>0.26</u>	<u>145,400</u>	<u>3.49</u>
TOTALS	90,500	1.81	220,000	5.13

* Values based on full occupancy.

8.4.3 Steam Service

Steam service for the Tremont Temple/90 Tremont Street site is provided by the Boston Thermal Energy Corporation (BTEC) from the steam generating plant located on Kneeland Street near Atlantic Avenue. The Kneeland Street generating station is used to supply the base load for the City-wide distribution system. This station has a generating capacity of 1.1 to 1.2 million lbs/hr and operates on a continuous basis, 365 days a year.

BTEC representatives have stated that the existing peak loads on their generating system are approximately 35-40% of capacity during the summer cooling peak and 70-75% of capacity during the winter heating peak.

Steam is presently used to heat Tremont Temple and the existing building at 90 Tremont Street. Estimated use for the existing buildings is 3.98×10^9 BTU/yr.

At this time, purchased steam is being evaluated for use as the heating source for the proposed development. Should the development team decide that steam is a cost effective manner of heating and/or cooling the proposed building, there appears to be ample excess capacity in the existing system to serve the project.

8.4.4 Natural Gas Service

Low pressure gas is supplied to the Tremont Temple/90 Tremont Street area by the Boston Gas Company through a network of gas lines located in many downtown streets. Both Tremont Temple and the existing 90 Tremont Street building connect to the Boston Gas system through connections in Tremont Street.

Discussions with Boston Gas Company representatives indicate that adequate supplies of natural gas are available to meet a greater demand within the city than is presently experienced by their system.

Natural gas does not play a major role as an energy source for the existing buildings. Gas is used for restaurant purposes in the building at 90 Tremont Street and is also used in the two kitchens within the Tremont Temple.

It is anticipated that there will be a total of approximately 3,500 SF of restaurant space in the new development. This is a reduction from the existing 6,500 SF of space. This reduction, with the corresponding loss of seating capacity should also result in a reduction in natural gas use.

8.4.5 Total Energy Use

In an effort to compare current total energy use with future needs, Table 8-9 was prepared. For the two scenarios, annual total energy use (lighting, heating, cooking) was calculated. Current use levels are reported under the existing heading. The estimated energy use for the proposed Tremont Temple/90 Tremont Street project following completion of the project is reported in the last column. This table shows that the new development will result in an increase in total energy use of 114% over existing conditions.

TABLE 8-9

TOTAL ENERGY USE INVENTORY*
(BTU/yr x 10⁹)

<u>Structure</u>	<u>Existing Area (gsf)</u>	<u>Existing Energy Use</u>	<u>Total Proposed Area (gsf)</u>	<u>Future Energy Use</u>
Tremont Temple	77,500	9.50	74,600	9.33
90 Tremont Street	<u>13,000</u>	<u>2.48</u>	<u>145,400</u>	<u>16.34</u>
TOTALS	90,500	11.98	220,000	25.67

* Includes energy for heating, cooling, lighting, mechanical systems and cooking.

8.5 Telecommunications Systems

8.5.1 Description of Existing Facilities

Basic telecommunication services are supplied to the Tremont Temple/90 Tremont Street area by the New England Telephone Company (NET). These services are provided by their Bowdoin Central Office (CO) through a conduit and manhole system located in area streets. Normal dial tone service to the 90 Tremont Street site is primarily by way of copper circuitry.

8.5.2 Measures to Accommodate Development

Discussions with NET representatives* indicate that the Bowdoin CO has available switching capacity to accommodate the level of additional future load anticipated by the redevelopment of the Tremont Temple/90 Tremont Street site.

The existing cable, conduit and manhole systems also appear to be adequate to sustain the new development. Further investigation by NET will be necessary, as the building design proceeds, to verify the adequacy of the cable system.

It is anticipated that the new development will be serviced by a combination of fiber optic and copper circuitry. All work on the telecommunications system will be performed to NET standards and will be subject to their review and approval. Costs of on-site system modifications will be borne by the developer.

8.6 Relative Impacts of Other New Development in the Project Vicinity

A number of other significant development projects are under construction or are planned in the Midtown Cultural District during the next several years. As required by the Scoping Determination issued by the Boston Redevelopment Authority, this section demonstrates the impacts of Tremont Temple/90 Tremont Street with respect to all the proposed projects in the Midtown Cultural District for which a Project Notification Form (PNF) has been submitted as of the date of the Scoping Determination.

8.6.1 Water Distribution System

The proposed developments in the Midtown Cultural District include the construction of nearly 8 million square feet of office, retail and hotel space. These uses will require approximately 1.3 million gallons per day (mgd) of water to satisfy expected needs. The developments analyzed and their associated water demand are presented in Table 8-10.

The Tremont Temple/90 Tremont Street project will require an average increase in water consumption of approximately 18,000 gpd. This corresponds to approximately 1.4 percent of the total water required by the proposed developments in the Midtown Cultural District.

8.6.2 Sewer Systems

Estimated average daily sewage generation for the proposed Midtown Cultural District projects is presented in Table 8-11. The total estimated daily sewage generation rate for all developments combined is approximately 873,000 gpd.

The entire Midtown Cultural District is tributary to the East Side Interceptor. The improvements to the ESI by the BWSC is expected to provide adequate capacity to handle the sewage generated by these projects.

* Personal communication with Mr. Robert Kelly, New England Telephone Company, August 2, 1989.

TABLE 8-10

WATER USE FOR OTHER PROPOSED AND APPROVED DEVELOPMENTS

<u>Project Name</u>	<u>Approximate Total Floor Area (gsf)</u>	<u>Estimated Average Water Demand (1) (gpd)</u>
Boston Crossing (2)	2,952,000	450,500
Commonwealth Center (3)	1,940,000	339,000
One Lincoln Street (4)	1,079,000	228,000
40 Franklin Street	634,700	85,700
146 Boylston Street	112,200	5,150
Pavilion at Park Square	341,000	46,000
Parkside West	96,600	20,700
Parkside Mason	44,200	11,600
Parkside East	115,900	26,800
45 Province Street	160,700	21,700
110-120 Tremont Street	<u>374,900</u>	<u>50,600</u>
Total	7,851,200	1,295,500

-
- (1) Based on Title 5 sewage generation rates. Values also include estimates of air conditioning cooling tower makeup water.
- (2) Information based on data presented in the DPIR dated May, 1989.
- (3) Information based on data presented in the DPIR, 1989.
- (4) Information based on data prepared for the FEIR.

TABLE 8-11

WASTEWATER GENERATION FOR OTHER PROPOSED
AND APPROVED DEVELOPMENTS

<u>Project Name</u>	<u>Approximate Total Floor Area (gsf)</u>	<u>Estimated Average Sewage Generation (1) (gpd)</u>
Boston Crossing (2)	2,952,000	341,700
Commonwealth Center (3)	1,940,000	209,100
One Lincoln Street (4)	1,079,000	113,500
40 Franklin Street	634,705	7,100
146 Boylston Street	112,200	10,100
Pavilion at Park Square	341,000	30,700
Parkside West	96,600	22,100
Parkside Mason	44,200	12,300
Parkside East	115,900	28,500
45 Province Street	160,700	14,550
110-120 Tremont Street	<u>374,900</u>	<u>33,700</u>
Total	7,851,200	873,300

-
- (1) Based on Title 5. Values also include estimates of air conditioning cooling tower blowdown.
- (2) Information based on data presented in the DPIR dated May, 1989.
- (3) Information based on data presented in DPIR, 1989.
- (4) Information based on data prepared for the FEIR.

The sewage generation estimates for the Tremont Temple/90 Tremont Street project show an increase in sewage of approximately 9,000 gpd over the existing uses on the site. This represents 1 percent of the total estimated sewage generation for projects proposed in the Midtown Cultural District.

8.6.3 Heating Requirements

The source of space heating for the proposed Midtown Cultural District projects may be provided by electricity, steam or natural gas. To provide a common denominator between these energy sources, heating requirement estimates in total British Thermal Units per year (BTU/yr) were generated for each development and are presented in Table 8-12. These values were calculated based on typical factors for new construction. The total estimated annual heating demand for all the developments combined is 262.7×10^9 BTU/hr.

The estimated heating demand for Tremont Temple/90 Tremont Street was estimated to be 8.2×10^9 BTU/yr. This is approximately 3 percent of the total heating requirements for all the proposed projects.

Both Boston Gas and Boston Thermal Energy Corporation are currently operating at levels well below the capacity of their systems, and should be able to supply ample energy to support the additional developments. Additionally, Boston Edison is currently upgrading its supply network to improve service to the downtown area.

8.6.4 Electric Service

Estimated average annual electric demand for each development is presented in Table 8-13. The total estimated annual electric demand for all projects combined is 207.5×10^6 kwh/yr.

The estimated increase in electrical demand for the Tremont Temple/90 Tremont Street project is approximately 3.3×10^6 kwh/yr. This amount is less than 2 percent of the estimated electrical demand for all proposed projects in the Midtown Cultural District.

Boston Edison is currently completing a new substation on Chatham Street to improve system capacity and shift some load from substation 514 on Kingston Street. The new substation, in conjunction with the North/Downtown Transmission Reinforcement project, should result in an adequate supply of electric power to the area.

TABLE 8-12

ANNUAL HEATING DEMAND FOR OTHER PROPOSED
AND APPROVED DEVELOPMENTS

<u>Project Name</u>	<u>Approximate Total Floor Area (gsf)</u>	<u>Estimated Average Heating Demand (BTU/yr x 109)</u>
Boston Crossing (1)	2,952,000	100.7
Commonwealth Center	1,940,000	66.0
One Lincoln Street	1,079,000	36.7
40 Franklin Street	634,700	17.0
146 Boylston Street	112,200	3.8
Pavilion at Park Square	341,000	11.6
Parkside West	96,600	3.3
Parkside Mason	44,200	1.5
Parkside East	115,900	3.9
45 Province Street	160,700	5.5
110-120 Tremont Street	<u>374,900</u>	<u>12.7</u>
Total	7,851,200	262.7

(1) Information based on data presented in the DPIR dated May, 1989.

TABLE 8-13

ANNUAL ELECTRIC USE FOR OTHER PROPOSED
AND APPROVED DEVELOPMENTS

<u>Project Name</u>	<u>Approximate Total Floor Area (gsf)</u>	<u>Estimated Average Electric Demand (1) (kwh/yr x 106)</u>
Boston Crossing (2)	2,952,000	80.5
Commonwealth Center	1,940,000	52.9
One Lincoln Street (3)	1,079,000	23.5
40 Franklin Street	634,700	17.1
146 Boylston Street	112,200	3.0
Pavilion at Park Square	341,000	9.2
Parkside West	96,600	2.6
Parkside Mason	44,200	1.2
Parkside East	115,900	3.1
45 Province Street	160,700	4.3
110-120 Tremont Street	<u>374,900</u>	<u>10.1</u>
Total	7,851,200	207.5

-
- (1) Assumes typical annual demand and includes electric cooling.
- (2) Information based on data presented in DPIR dated May, 1989.
- (3) Information based on data prepared for the FEIR.

URBAN DESIGN

Since its inception, the proposed Tremont Temple/90 Tremont Street project has presented the Applicant and development team with numerous challenges in terms of financibility, approvals, program objectives, structural feasibility and the architectural design of the joint development. The Ninety Tremont Street component of the Proposed Project was originally envisioned as a fully contextual Boston building which had an image of solidity and permanence--as if it had existed in the historic Tremont streetscape from an earlier generation. The objective for the restoration of the Tremont Temple's classical revival facade was to return it to its original configuration and brilliance. The design team assembled to execute these sensitive tasks is first rate: The continuing association of Robert A. M. Stern Architects and Jung/Brannen Associates for the new Ninety Tremont Street component of the project, and Notter, Finegold + Alexander for the restoration of Tremont Temple.

The Applicant's expectations have been successfully fulfilled relative to the quality of the architectural design for Ninety Tremont Street, the complex technical solution to constructing a state of the art office building above and adjacent to the sensitive Temple structure, and the care and competence with which the historic rehabilitation for Tremont Temple has been planned. All three architects, several engineers and numerous other consultants have worked together for over a year on the schematic designs for the Tremont Temple/90 Tremont Street project. After project approvals and the finalizing of certain design details of the project components, the design team will proceed immediately with the Design Development Phase.

The sections following provide details of the physical aspects of the Proposed Project including urban design context, programming, constraints, precedents, and the evolution and presentation of the schematic design scheme.

9.1 Urban Design Context

9.1.1 Project Site and Surrounding Context

The Tremont Temple/90 Tremont Street project site is situated in a dense urban area of downtown Boston which contains a predominance of historic commercial and institutional structures of light colored masonry and brick as shown in the photo reproduction, Figure 9.1-1. Austere colonial churches, grand Victorian commercial buildings and an eccentric blend of revival style institutional structures surround the project site. However, the Tremont Temple/90 Tremont Street project area is also directly influenced in scale, color and texture by the closest residential neighborhood to the site, Beacon Hill. Red brick, small scale structures and residential details reach over the crest of, and down both Beacon and Park streets and influence the neighboring commercial buildings which face Boston Common on Tremont Street's eastern edge. As described



on the following pages and shown in Figure 9.1-2, Ninety Tremont Street has been designed with a high level of detail, to be articulated in coursed limestone and precast to match the coloration of Tremont Temple's limestone.

9.1.2 Urban Design Objectives

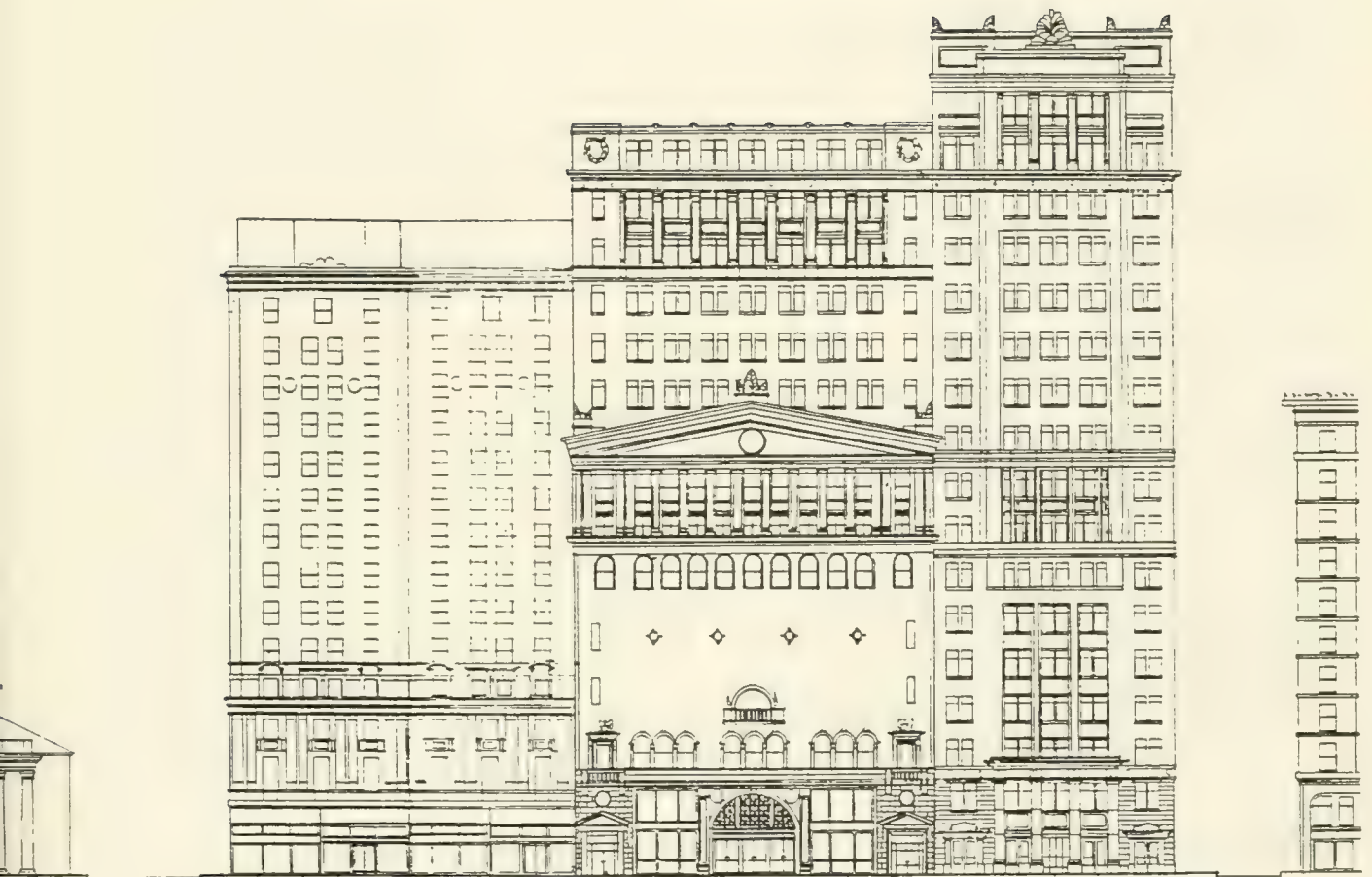
Tremont Temple/90 Tremont Street was originally conceived as a prototype for the new style of Boston development which embodies the spirit of, and is encouraged by the Midtown Cultural District Plan. In this city of limited land mass, small scale sites and historic structures, the type of inventive joint development proposed herein--effectively a public/private partnership which maximizes land values by developing air rights--will become more commonplace, and increasingly necessary to ensure continued maintenance and preservation of our important historic fabric. The Applicant has striven to comply with the Midtown Cultural District Plan by upgrading a currently underutilized site, preserving a historically and architecturally significant building, improving and promoting an important cultural resource, improving pedestrian-oriented ground level and open space uses and providing a day care center within the development.

The Midtown Cultural District design regulations have also been met through sensitive architectural design of the new Ninety Tremont Street building, the planned Bosworth Street pedestrian way, strategic setbacks which minimize environmental impacts from the project and preserve adequate access to light and air to surrounding streets, and most importantly, the concept of a slender profile of the new building representing a unique addition to both the Tremont streetscape and Boston skyline.

9.1.3 Urban Design Objectives

Tremont Temple Facade Rehabilitation and Ground Floor Restoration: The historic preservation component of the Tremont Temple/90 Tremont Street project will serve to enliven the prominent Tremont Temple facade which is visible from Boston Common and Government Center. The fifteen colors of diaper-patterned terra cotta blocks as well as the rusticated limestone and trim will benefit from a thorough wash, and repointing where necessary. The facade will be stripped of its more modern improvements such as the marquee, masonry and metal infill in the storefronts and the interior illuminated projecting sign. The storefronts will be reconfigured consistent with their original scale and rhythm and will welcome both parishioners as well as patrons of the arts into a grand double-height lobby area, up a new central stair and into the restored Converse Hall.

Tremont Temple Interiors: The improvements to the interior of Tremont Temple will include the reconfigured entrance lobby and first floor multi-function hall and facilities, a restored



TREMONT STREETSCAPE

Figure 9.1-2



Converse Hall with specialty items for religious, performing arts and cultural uses, renovated Church office, counselling and classroom spaces, and structural, mechanical, electrical, circulation and fire safety systems upgrade.

Unique Architectural Character of Tremont Temple: The design of Tremont Temple is the work of Clarence H. Blackall and George F. Newton and is, according to both the Massachusetts Historical Commission and the Boston Landmarks Commission, a "unique example of a second Renaissance revival building executed in the Florentine style". Its limestone base surmounted by some fifteen colors of terra cotta will be carefully restored. As noted above, the lobby and entrance to the Temple will be redesigned, and the resplendent Converse Hall itself will be restored to its original grandeur.

The prominence of the Temple on Tremont Street, located diagonally opposite the venerable Granary Burying Ground, underscores its considerable urbanistic importance. The careful restoration of the Temple's unique moldings, various surrounds, rusticated base, and crowning loggia will preserve the subtle shadow lines and resultant lively facade which they create.

Air Rights Construction Height: The building height over Tremont Temple at 190'-6" is mitigated by important setbacks at 107'-9", the existing Temple roof level, at 154'-9", in line with the major cornice of the Parker House Hotel, as well as the top level, or at 178'-7". The massing strategy for the entire project also minimizes the presence of the new construction above the Temple.

Ninety Tremont Street Setbacks, Streetwall Height, Floorplates: The intent of the design of the new Ninety Tremont Street construction over the Temple is to minimize its presence by setting it back a substantial amount from the Temple facade while holding the vertical element of the Ninety Tremont Street facade on a consistent plane above the Tremont Streetwall. Currently, the setbacks above the Temple are 25 feet for the first three stories, an additional 2 foot setback (27 foot setback) for two stories above that, and a further 2 foot setback (29 feet) for the top floor.

Ninety Tremont Street itself maintains the streetwall along Tremont Street to a height of 84'-6" before stepping back at the eighth and ninth floors a total distance of 10'-8", which is retained as a consistent setback until the 190'-6" penthouse level. Ninety Tremont Street's floorplate sizes from the ground floor through floor ten are approximately 6,150 square feet each. Then, at the eleventh floor, the air rights construction commences and larger floorplates spanning both the 90 Tremont Street site and the Temple occur. The average size floorplate on floors eleven through sixteen is approximately 14,040 square feet each.

Ninety Tremont Street Ground Floor Uses: In keeping with the type and location of uses offered by numerous commercial buildings throughout the Midtown Cultural District, including the Parker House Hotel, Ninety Tremont Street will offer retail and restaurant uses on both its ground and second floors. Although more than half of Ninety Tremont Street's ground floor will be devoted to service, safety, and mechanical spaces, the remaining lobby, retail and cafe areas will be of the highest quality in design and detailing. Ninety Tremont Street plans to market these spaces to commercial tenants who will be attracted by such quality and who will strive to highlight their establishments by designing quality storefront window displays, ensuring clear visibility through storefront windows and installing high quality lighting and signage.

If the double-level restaurant/cafe is successfully marketed, lively second floor activity will contribute to the daytime and evening vitality of the area. In addition, plans for outdoor cafe dining through four sets of French doors on the Bosworth Street side of Ninety Tremont Street's restaurant will add to the streetlife and atmosphere of the Tremont and Bosworth streets area.

Bosworth Street Improvements: The pedestrian environment of Bosworth Street will be enlivened through both urban landscape improvements and active new commercial activity from Ninety Tremont Street's ground floor restaurant. The new pedestrian way, with its paving, lighting, furniture and signage, will encourage increased foot traffic on Bosworth Street for pedestrians wishing to reach Tremont Street from Bromfield, School and Province streets.

Tremont Temple/90 Tremont Street's loading/service/auto drop-off area will be located at the most inobtrusive position possible on the building's Bosworth Street elevation. The single entrance will be at the farthest point of the building from Tremont Street to allow the Ninety Tremont Street restaurant to have uninterrupted Bosworth Street frontage and outdoor cafe seating area.

Shadow Impacts: As illustrated in Section 7.2 of the Environmental Protection Component of this report, shadows cast by the Tremont Temple/90 Tremont Street project onto neighboring open spaces, buildings, sidewalks and streets are minor. Given the modest height of the project, the shadows cast on the east facade of the Boston Athenaeum do not impact the periodicals room on the first floor or the main reading areas on the fourth and fifth floors. They are also not a significant intrusion on the Granary Burying Ground. As described in Section 7.2, the proposed project and the Substantial Accord scenario impact the Granary only marginally more than the As-of-Right scheme.



Statement of Design Intent: The design intent for the new construction at Ninety Tremont Street is to introduce a tower image, albeit modestly scaled, asymmetrically in the project to create a strong corner at Tremont and Bosworth streets and also improve the urban landscape of Bosworth Street. The historic relationship of church and tower is a classic composition which is also conveyed by the new construction at Ninety Tremont Street. The addition of active ground level uses such as Ninety Tremont Street's retail shop, restaurant and outdoor cafe on Bosworth Street will open the new development up to the activity of the street rather than give the appearance of solely an austere institutional or office building.

The objectives for the detailing and coloration of the new component of Tremont Temple/90 Tremont Street include creating a contemporary addition to the streetscape and the district which recalls and respects the architectural details, hues and textures of both Colonial and Victorian Boston. To complement the surrounding mix of eclectic materials, colors and styles, Ninety Tremont Street is grand in its level of detail yet refined in coloration and scale. In this respect, it also combines the classic commercial building style of the area with the unique Beacon Hill residential image. Continuing this philosophy of combining contrasting elements, Ninety Tremont Street's coursed limestone and precast facades match the coloration of the Temple's rusticated limestone to offset the Temple's multicolored terra cotta, while the new buildings's first two stories maintain and complement the rustication of the neighboring facade.

Like many of the best buildings of the past, Ninety Tremont Street adopts the form of a Classical column with a clearly defined base, shaft and top. At the same time, the building responds to the complex requirements of its specific site; a setback above the street wall allows the low-rise Temple to be brought effectively into its new mid-rise context, rather than to be overwhelmed by it. The Temple consequently maintains its distinctive profile in the streetscape.

As designed by Robert A. M. Stern Architects, Ninety Tremont Street respects the rich architectural forms and associations of the highly eclectic Boston landmark, Tremont Temple. At the same time, it establishes its own identity as an important mixed-use building in the downtown. The design of Ninety Tremont Street takes its cue from the American skyscraper tradition in which utilitarian space was ingeniously wrapped in aesthetically powerful, historically derived form; it adopts some of the Temple's decorative features, while expressing a dignified, austere Classical design. Ninety Tremont Street simultaneously serves as a foil for its more flamboyant neighbor and provides a grace note for the visually exciting but stylistically diverse area in which it exists.

While Ninety Tremont Street exerts a strong urban presence,



adopting the image of a man-made acropolis which serves as a broad pedestal for a colonnaded temple silhouetted against the sky, it is also "user-friendly."

9.2 Program Description

The proposed Tremont Temple/90 Tremont Street project entails:

- o The demolition of Ninety Tremont Street and the Temple's 8th or penthouse floor;
- o The construction of 80 parking spaces under both sites;
- o The renovation of the Temple facade and interiors including HVAC and circulation systems; and
- o The construction of a new first class commercial building adjacent to and in the air rights above Tremont Temple.

Program elements and space allocations for the Tremont Temple/90 Tremont Street project are shown below in Table 9-1 with a graphic representation of the information following in Figure 9.2-1. Tremont Temple's space program is virtually identical to existing conditions with the exception of the new day care center. (Common and circulation area allocations are included in all square footages.)

TABLE 9-1

FLOOR USES AND AREAS

<u>Floor</u>	<u>Uses</u>	<u>Square Footage</u>
Sub-Basement	Parking, Mechanical Space	6,970
Basement	Parking	19,920
<u>Tremont Temple</u>		
1	Lorimer Hall	3,600
	Chapel	825
	Related Meeting Rooms, Facilities	7,525
2, 3, 4, 4A	Converse Hall	34,620
	Related Meeting Rooms	
5, 6, 7	Church and Counselling Offices	24,030
	Day Care Center	4,000
<u>Ninety Tremont Street</u>		
1	Restaurant	1,000
	Retail	1,500
	Services, Parking Drop-Off	3,500
2	Restaurant	2,500
	Utilities	3,500
3 - 10	Office (average per floor)	6,145
11 - 16	Office (average per floor)	14,040
TOTAL NOT INCLUDING PARKING		220,000

TREMONT TEMPLE/90 TREMONT STREET

FACT SHEET

TREMONT TEMPLE ZONING GSF FLOOR		90 TREMONT STREET FLOOR ZONING GSF	
8,000	7 *	16	13,800
10,000	6	15	14,000
10,030	5	14	14,000
4,450	4A	13	14,150
8,570	4	12	14,150
9,450	3	11	14,150
12,150	2	10	5,750
11,950	1	9	5,900
		8	5,900
		7	6,240
		6	6,340
		5	6,340
		4	6,340
		3	6,340
		2	6,000
		1	6,000
74,600	TOTAL	TOTAL	145,400

* 4,000 SF day care center to
be located on floor 5, 6 or 7.

ZONING STATS

90 TR Street Area:	145,400	Zoning GSF
Tremont Temple Area:	74,600	Zoning GSF
Total Gross Area:	220,000	Zoning GSF
Site Area:	19,920	SF
Zoning FAR:	11.0	
Gross Parking Area:	26,890	GSF
Parking Spaces:	80	

Figure 9.2-1

9.3 Existing Conditions Photographs

Photographs of the site, the existing buildings, streetscape views and special details of Tremont Temple and the historic Tremont Street area follow as listed below:

- Figure 9.3-1 Perspective View from North
- Figure 9.3-2 Perspective View from South
- Figure 9.3-3 View of Bosworth Street
- Figure 9.3-4 Province House Steps
- Figure 9.3-5 Tremont Temple First Floor
- Figure 9.3-6 Temple Terra Cotta Facade
- Figure 9.3-7 Dolphin Details
- Figure 9.3-8 Temple Columns
- Figure 9.3-9 Temple Cornice Moldings
- Figure 9.3-10 Temple Pediment Ornament
- Figure 9.3-11 Converse Hall









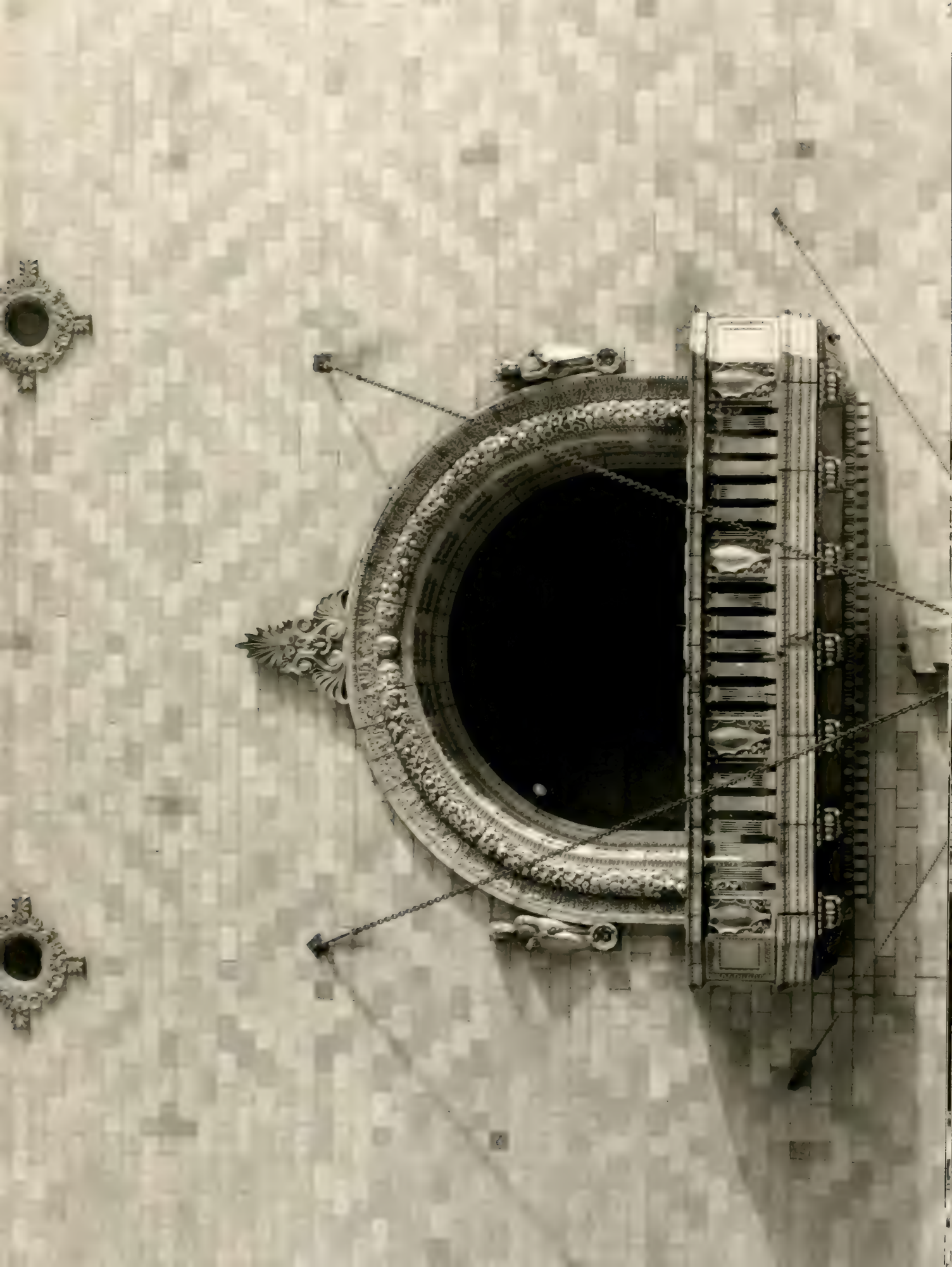


NEVADA
DISCOUNT
GOLF
FOOT LOCKER
HOGAN
LYNX
HILLIST

THE TEMPLE MEMORIAL CHAPEL

TREMONT TEMPLE BAPTIST CHURCH

TREMONT - TEMPLE











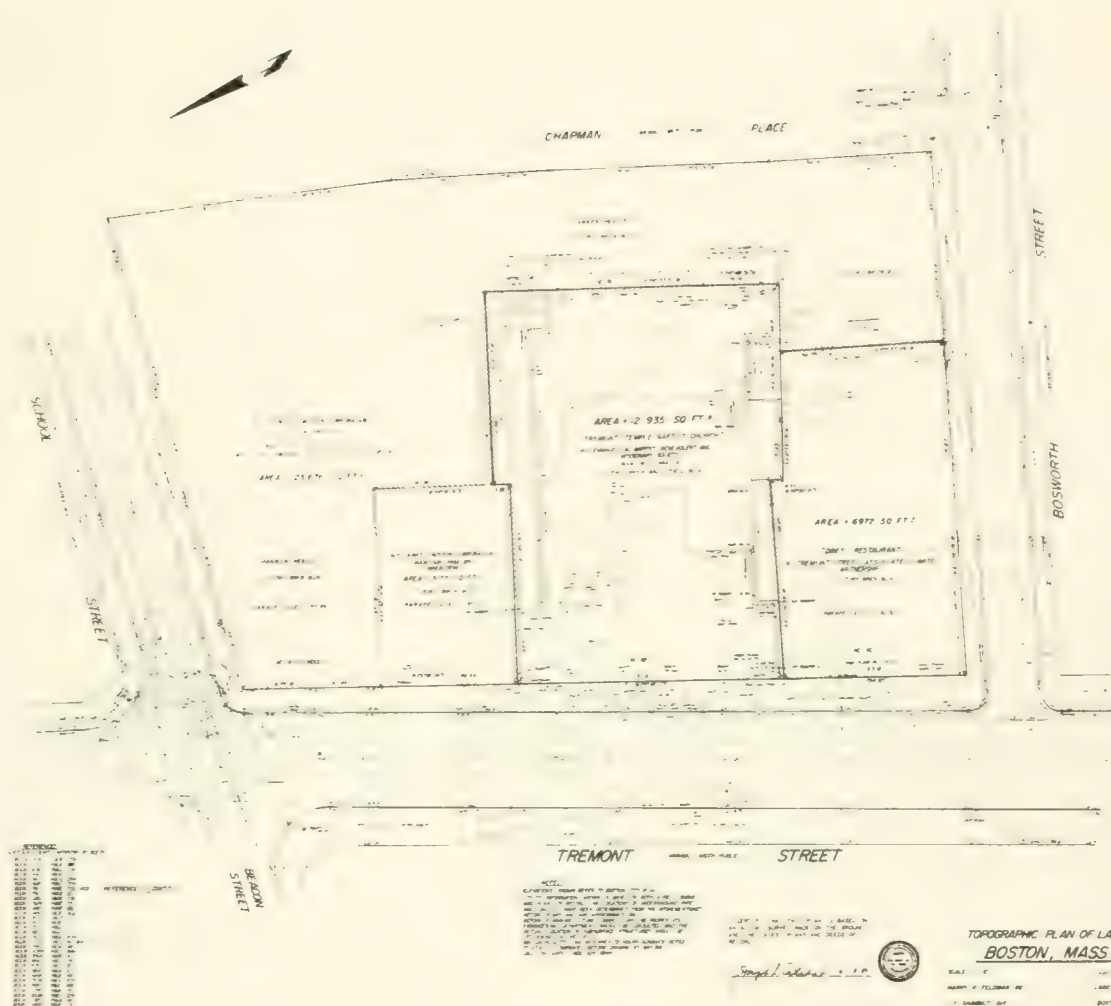


9.4 Site Information

This section presents the following site information figures:

- Figure 9.4-1 Utilities Survey
- Figure 9.4-2 Site Plan
- Figure 9.4-3 Tremont Streetscape
- Figure 9.4-4 Bosworth Streetscape





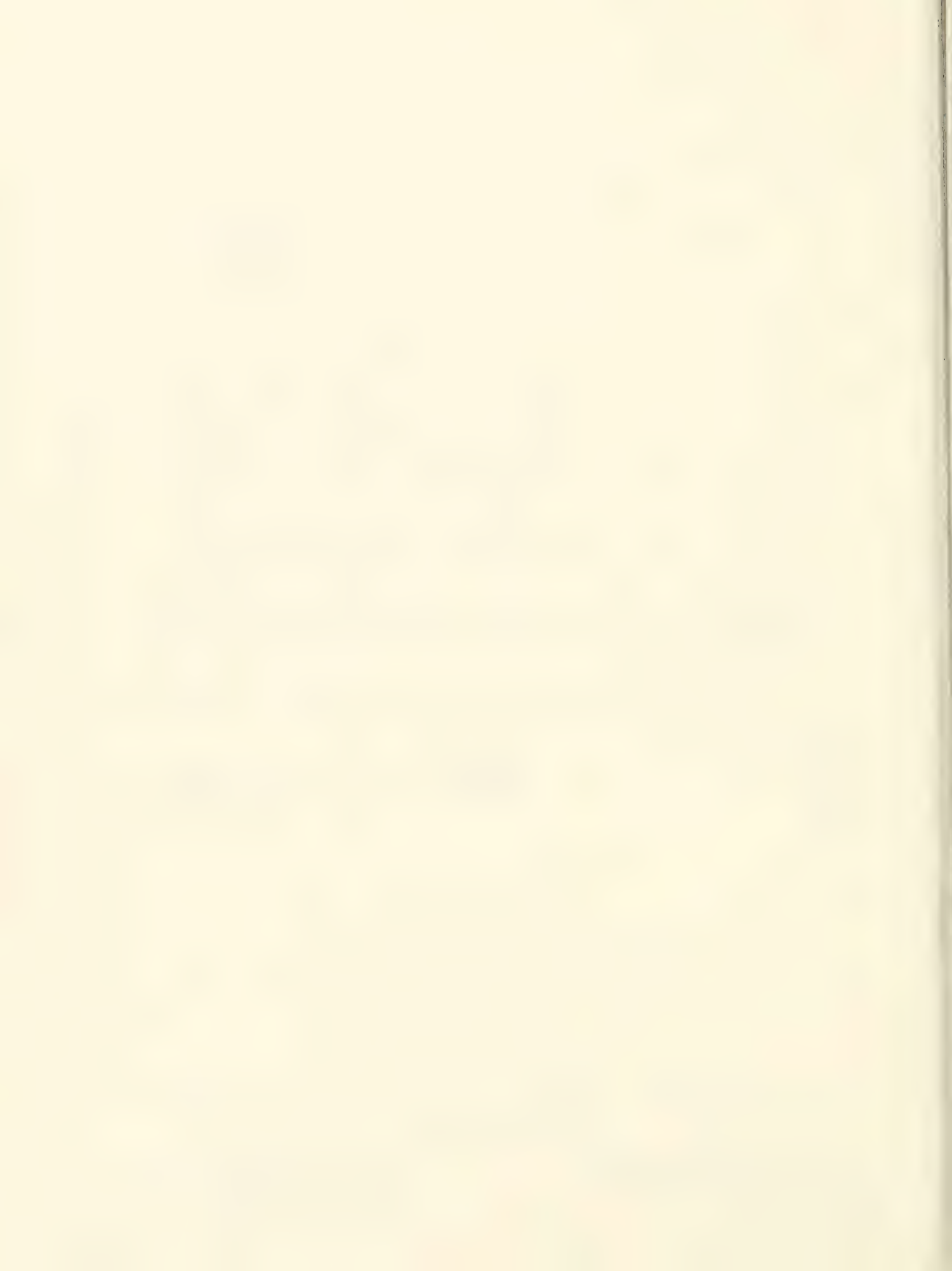
UTILITIES SURVEY

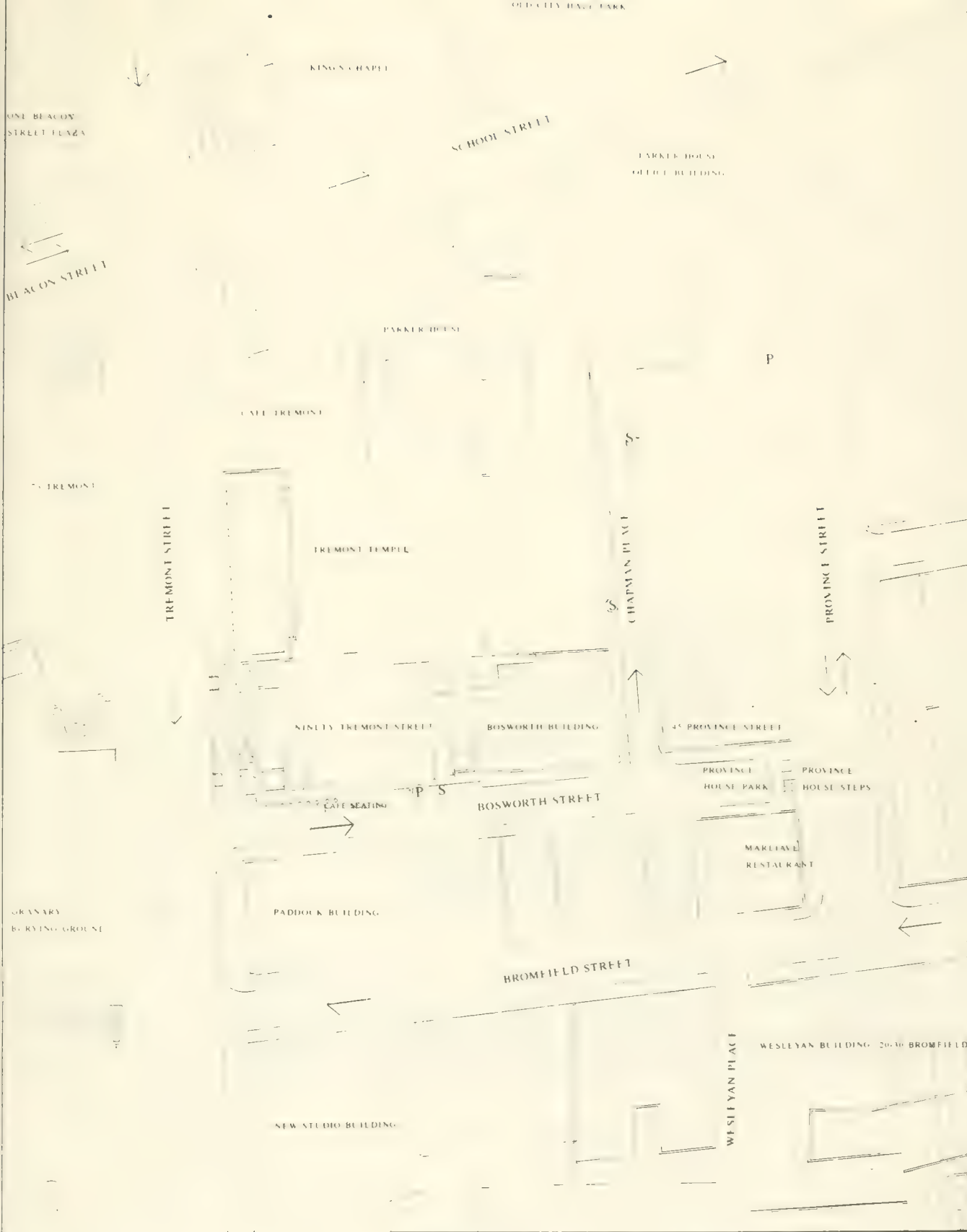
· NINETY TREMONT STREET · BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 4 1 DECEMBER 1989

ROBERT A. M. STERN ARCHITECTS
IN ASSOCIATION WITH
JUNG/BRANNEN ASSOCIATES, INC.

Figure 9.4-1





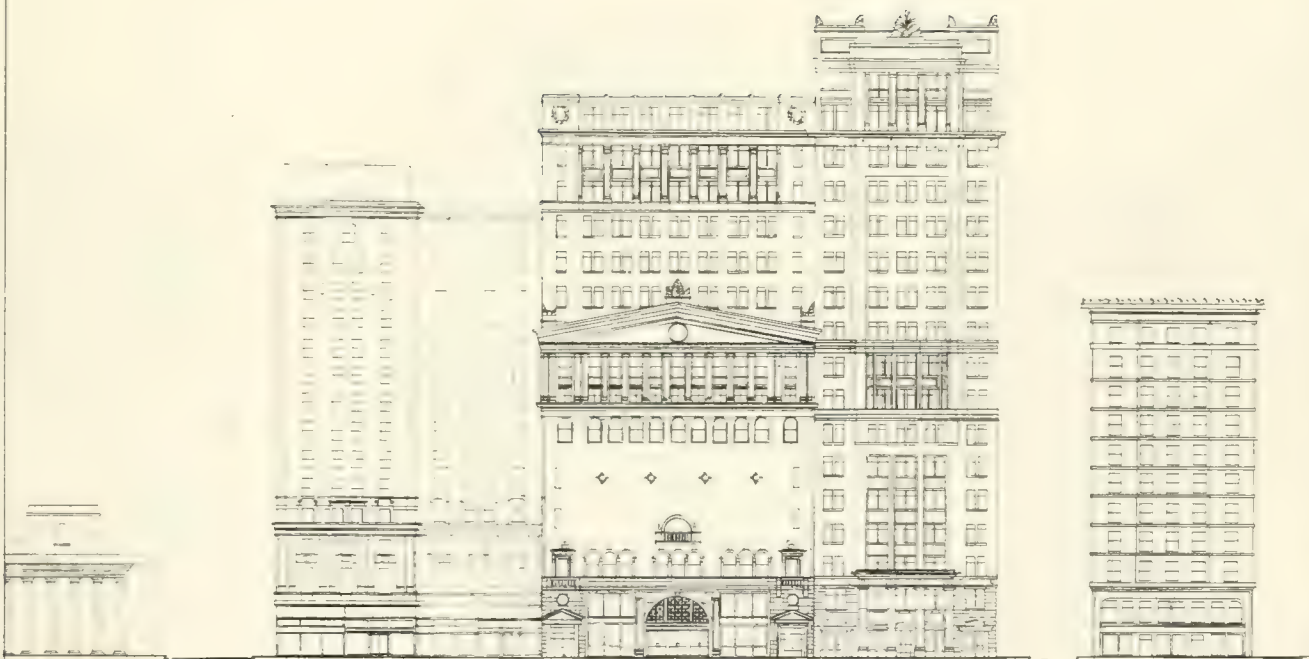
· NINETY TREMONT STREET · BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 5 4 DECEMBER 1989

←	Vehicular traffic flow
P	Parking
S	Service

ROBERT A. M. STERN ARCHITECTS
IN ASSOCIATION WITH
JUNG BRANNEN ASSOCIATES, INC.

Figure 9.4-2



TREMONT STREET ELEVATION

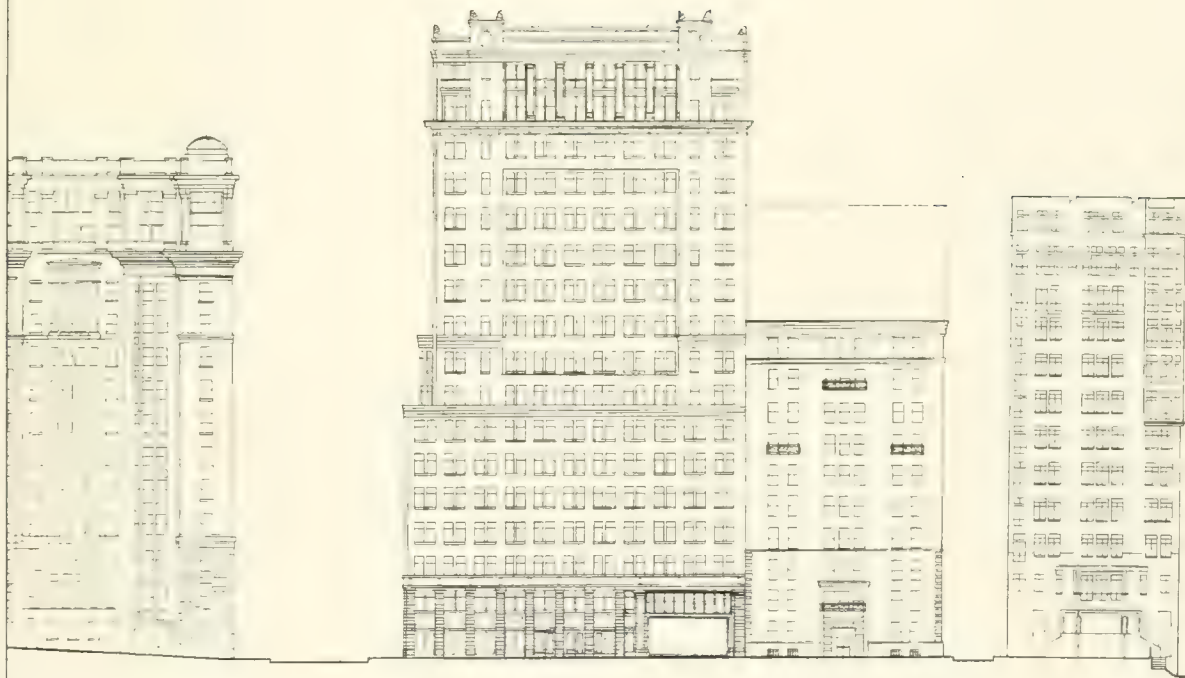
· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 6 4 DECEMBER 1989

ROBERT A. M. STERN ARCHITECTS
IN ASSOCIATION WITH
JUNG/BRANNEN ASSOCIATES, INC.

Figure 9.4-3





BOSWORTH STREET ELEVATION

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 7 4 DECEMBER 1989

ROBERT A. M. STERN ARCHITECTS
IN ASSOCIATION WITH
JUNG BRANNEN ASSOCIATES, INC.

Figure 9.4-4

9.5 Design and Massing Options

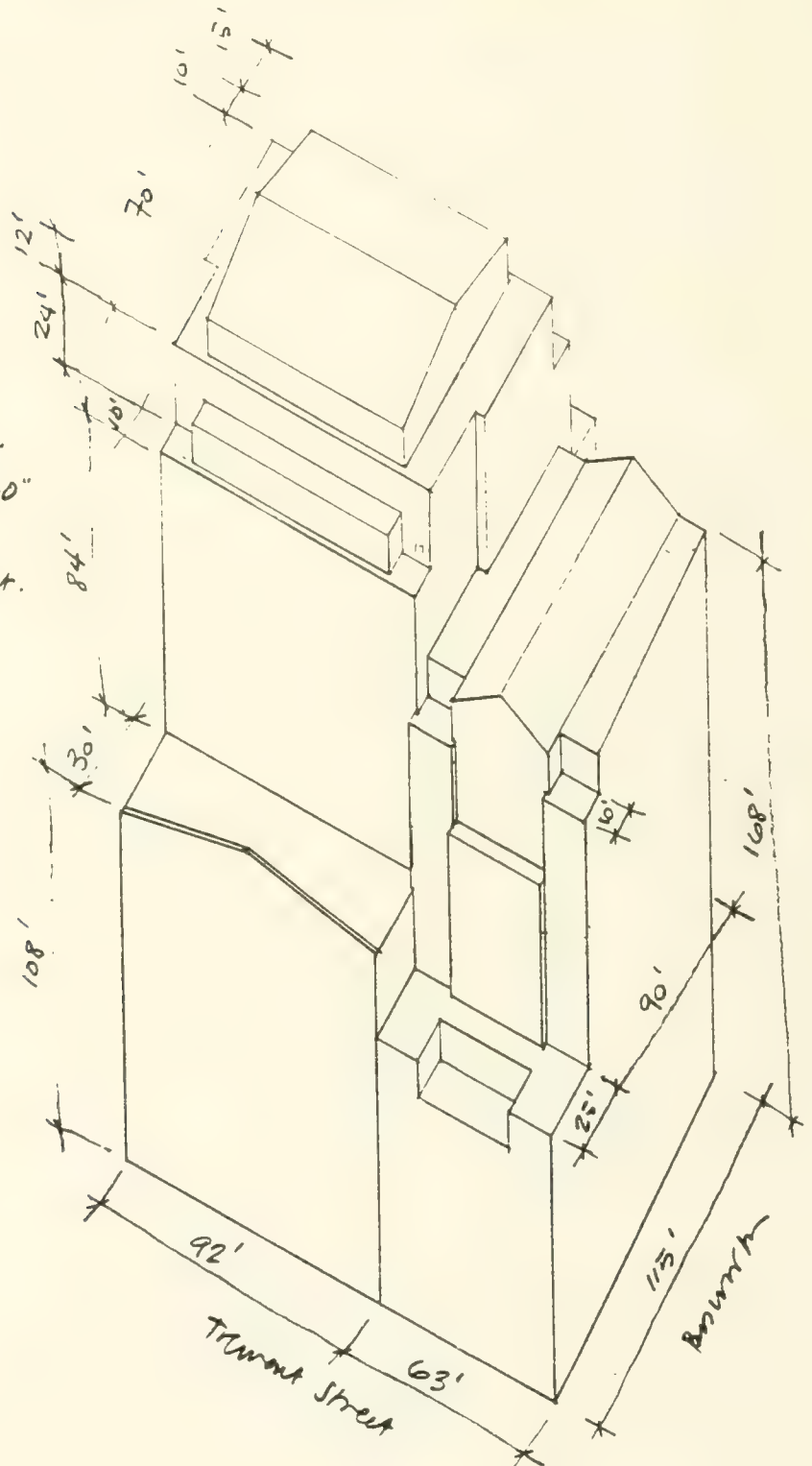
Numerous presentations have been made since the filing of the Project Notification Form on the pre-schematic design alternatives for Tremont Temple/90 Tremont Street. A small sample of the early combinations of component heights, densities and details which the Applicant and the design team studied are shown on the following pages as Figure 9.5-1.

Robert A.M. Stern Architects
 90 TREMONT STREET
 ALTERNATIVE 2A

200,000 sq ft., approx.

Height over Temple: 228'-0"
 Height over 90 Tremont: 156'-0"

Total floors: 19 at Temple
 Total floors: 13 at 90 Tremont.



10/21/88 St James Properties

Figure 9.5-1

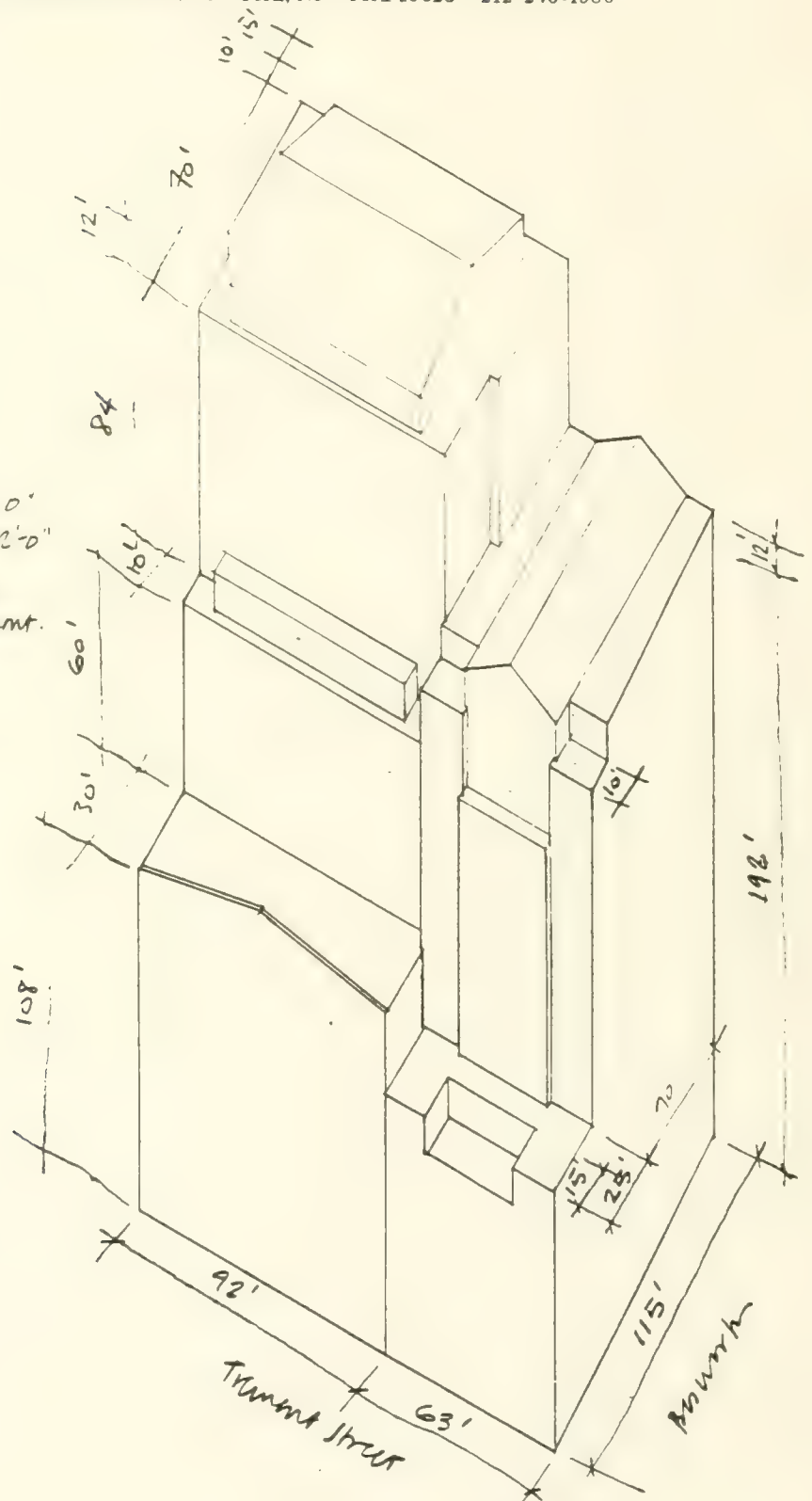
Robert A.M. Stern Architects

90 Tremont Street
Alternative IB

240 000 sq. ft approx.

Height over Temple. 264'-0"
Height over 90 Tremont 142'-0"

Total floors. 22 at Temple
Total floors. 16 at 90 Tremont.



10/21/82 for James Proprietor

Robert A.M. Stern Architects
90 Trueman Street
Alternative II A

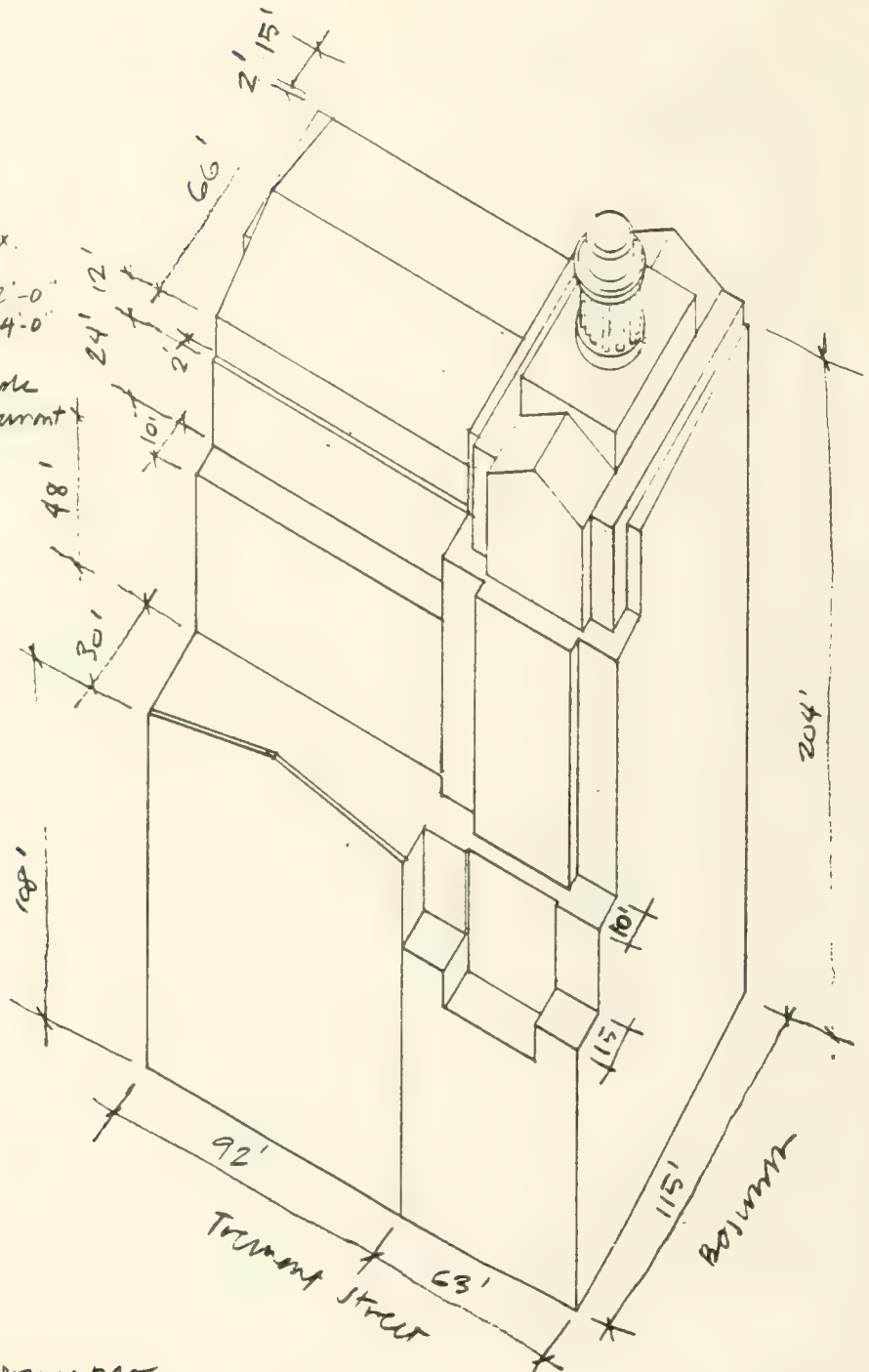
200,000 sq. ft. approx.

Height over Temple: 192'-0"
Height over 90 Tunnel: 204'-0"

Height over ground 204'-0"

Total forms: 16 at temple

Total flows 17 at 90 Turrent



10/21/88 Lt James Propp on

Robert A.M. Stern Architects

90 Tremont Street
Alternative IA

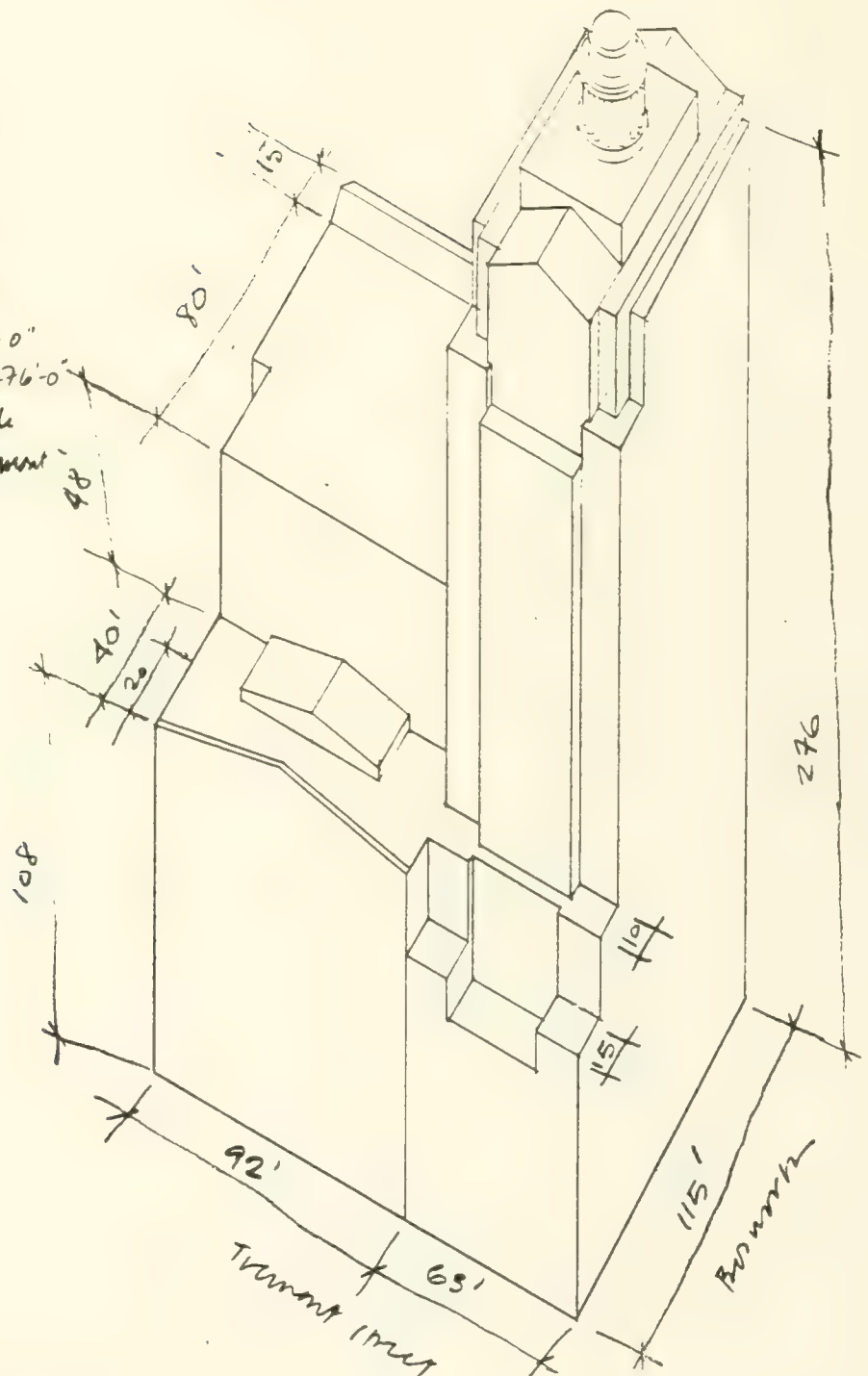
200,000 sq. ft., approx

Height to Temple 136'-0"

Height over 90 Tremont 276'-0"

Total floors 13 at Temple

Total floors 23 at 90 Tremont



11/21/88 J. Davis Architects

Robert A.M. Stern Architects

90 Tremont Street

Alternative II C

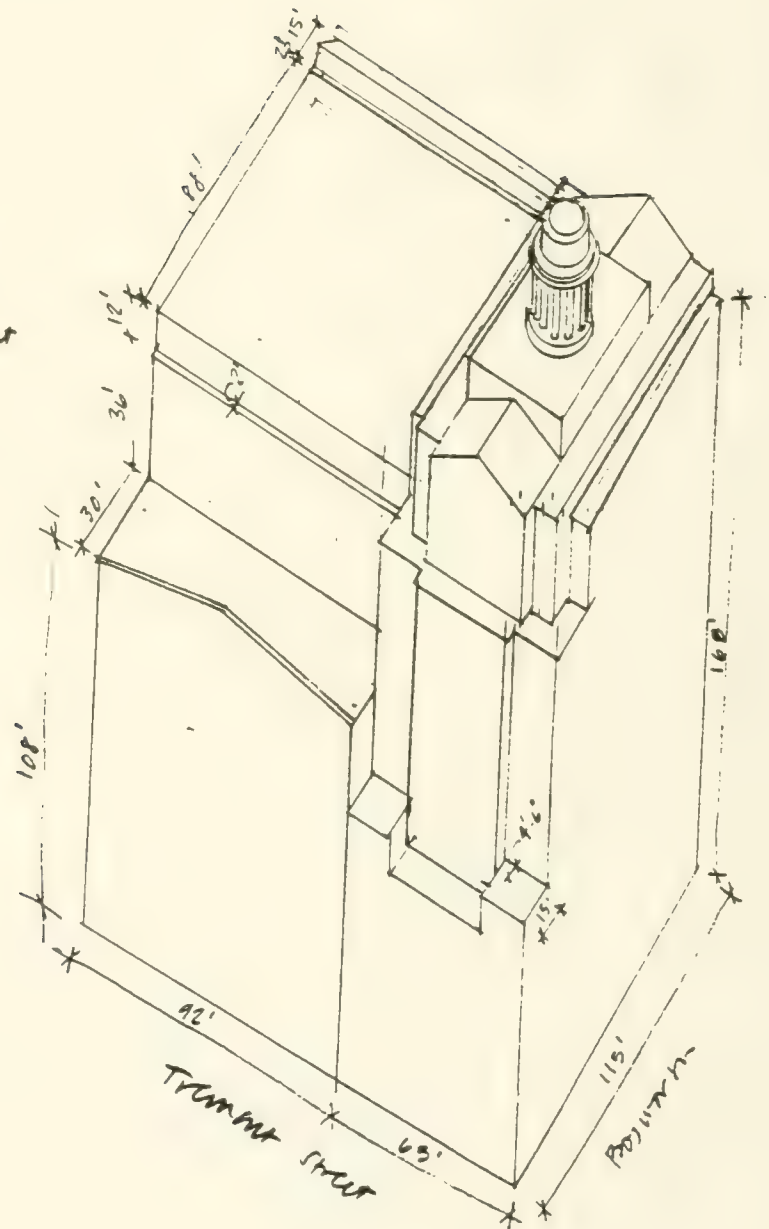
70,000 sq. ft. approx.

Height over Temple: 156'-0"

Height over 90 Tremont 166'-0"

Total floors: 13 at Temple

Total floors 14 at 90 Tremont



11/16/88 St. James Properties

Robert A.M. Stern Architects

90 Tremont Street
Alternative IB

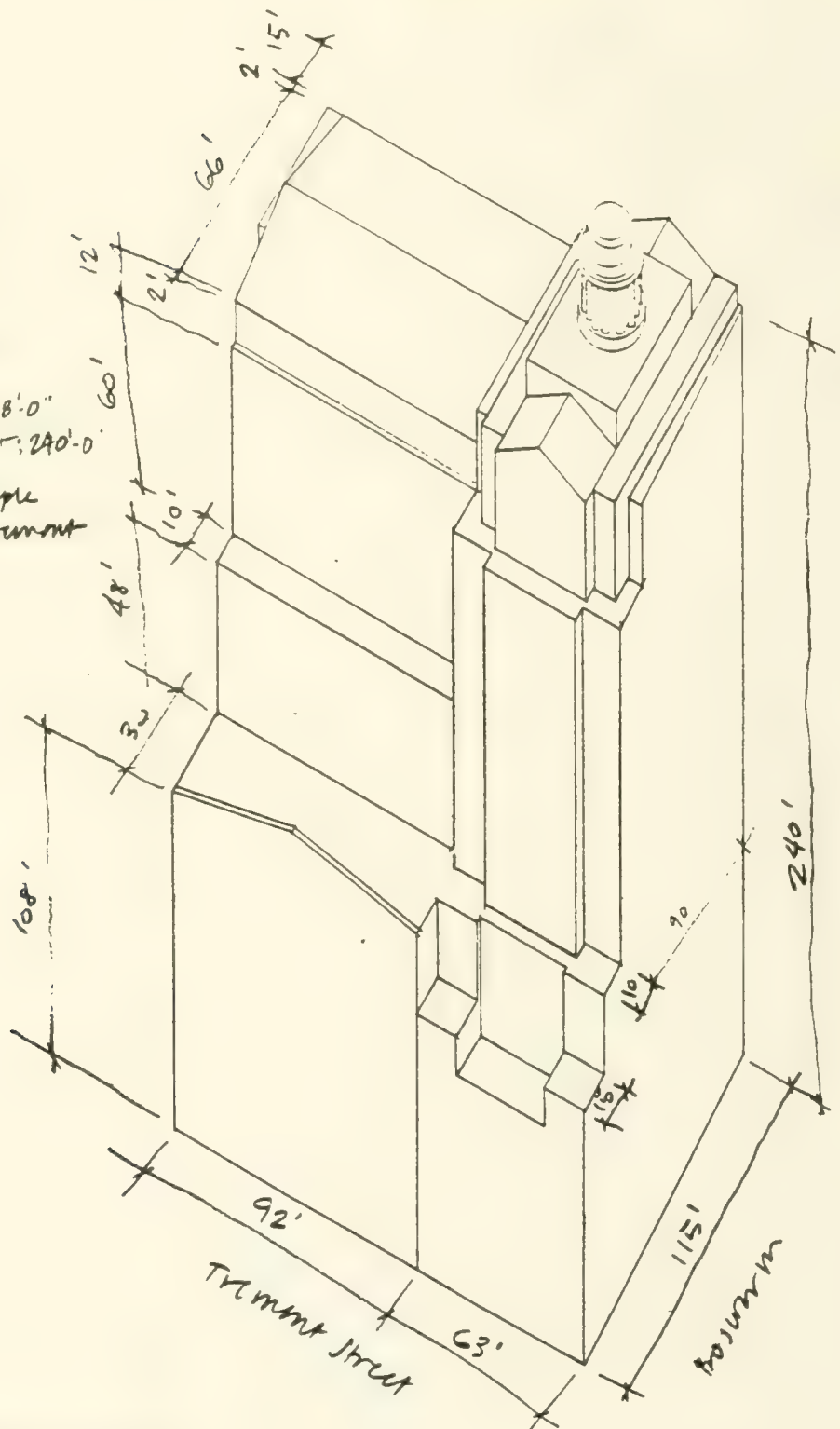
240,000 sq ft approx

Height over Temple: 228'-0"

Height over 90 Tremont: 240'-0"

Total floors 19 at Temple

Total floors 20 at 90 Tremont



10/21/88 St James Properties

Robert A.M. Stern Architects

90 Tremont Street
Alternative II B

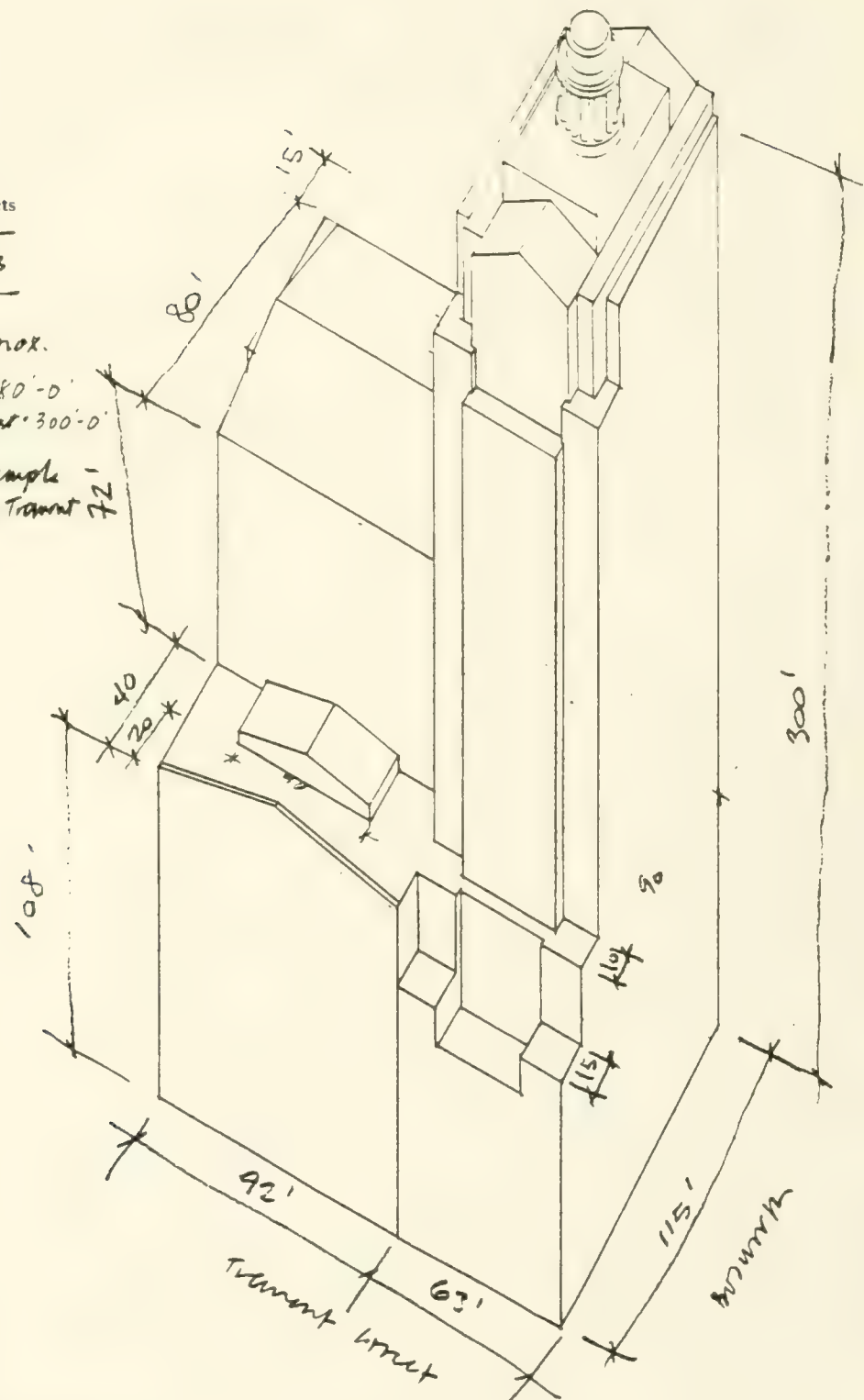
240,000 sq. ft. approx.

Height over Temple 180'-0"

Height over 90 Tremont 300'-0"

Total floors 15 at Temple

Total floors 25 at 90 Tremont 72'



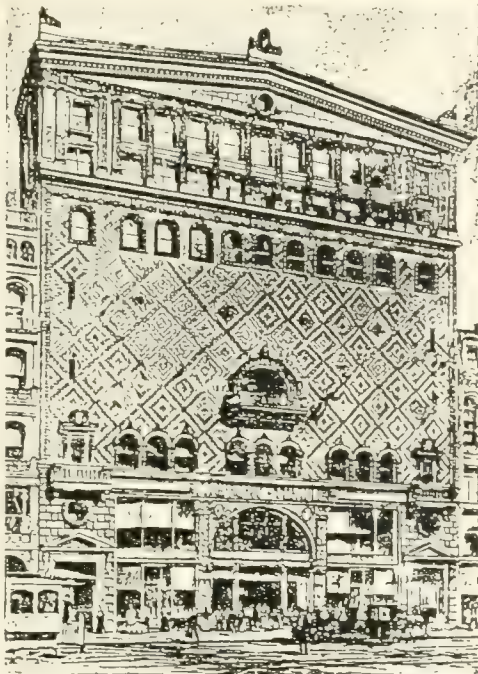
10/21/88 st. dimensions

The following Figure 9.5-2 is a reduction of the design booklet which was distributed at the Midtown Cultural District Task Force design review meeting held in February, 1989. It contains presentation materials on alternative project scenario designs and statistics, precedents of the Robert A. M. Stern "slender tower" design concept, eye-level perspective views of the different pre-schematic alternatives and preliminary environmental analyses.

TREMONT TEMPLE
90 TREMONT STREET

TREMONT TEMPLE BAPTIST CHURCH
ST. JAMES PROPERTIES

Figure 9.5-2



TREMONT TEMPLE
Ca. 1894

February 7, 1989

Evangelical Baptist Benevolent and Missionary Society
Tremont Temple Baptist Church
76-88 Tremont Street
Boston, Massachusetts 02108

90 Tremont Street Associates, L.P.
St. James Properties, Inc.
67 Battery March Street
Boston, Massachusetts 02110

CONTENTS

I. INTRODUCTION	3
II. TREMONT TEMPLE	4
III. MASSING AND DESIGN	
Scheme I: 155'-0" high, FAR 10	6
Scheme II: 203'-0" high, FAR 11	8
Scheme III: 251'-0" high, FAR 11	10
Scheme IV: 215'-0" high, FAR 11	12
Preliminary Shadow Studies	14
Pedestrian Level Perspectives	16
Precedents for Design	30
IV. ZONING	35
V. ECONOMICS	36

I. INTRODUCTION

The Tremont Temple/90 Tremont Street Project Notification Form was submitted in September, 1988 prior to the start of design of the project. Since that time, the project architects have generated several massing and facade design studies, as well as the resultant environmental and economic consequences of each. The design team has also undertaken programming, space planning and cost estimating for the joint development.

This booklet presents a summary of the Tremont Temple/90 Tremont pre-schematic design phase, which has resulted in the preferred alternative, Scheme IV, as listed below. The project is herein presented in four distinct scenarios:

SCHEME I:	155'-0" high, FAR 10
SCHEME II:	203'-0" high, FAR 11
SCHEME III:	251'-0" high, FAR 11
SCHEME IV:	215'-0" high, FAR 11



11 TREMONT TEMPLE

The Tremont Temple Baptist Church will undertake the following items:

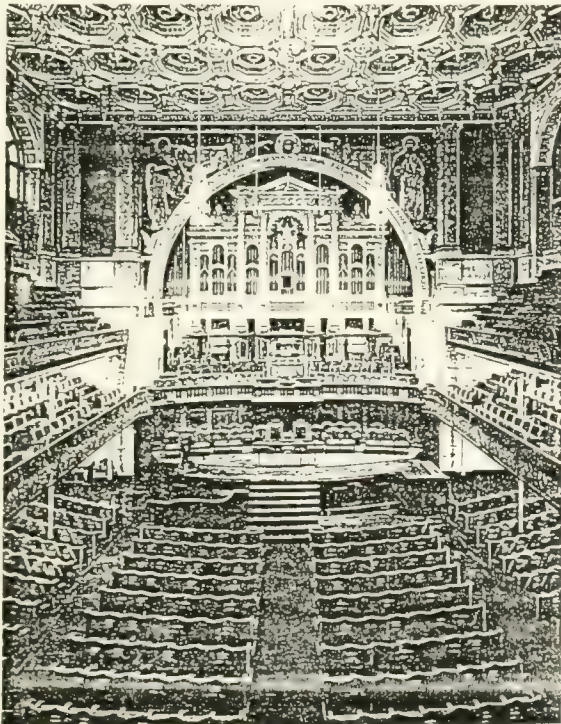
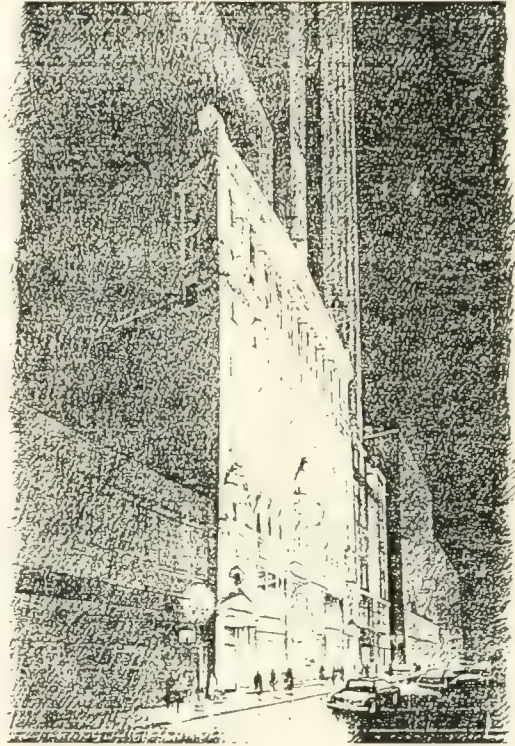
Restoration of the facade including recreation of the historic storefront configuration;

Renovations to Converse Hall--both physical and systems improvements--including creation of a double-height entrance pre-function area;

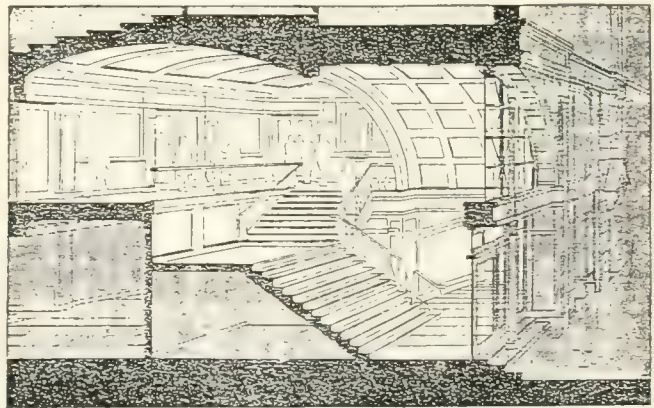
Reconfiguration and upgrading of support spaces for the Church including new multi-purpose, office and counselling areas, and

Creation of an endowment for a permanent maintenance and operations trust fund.

The current budget for the work outlined above is approximately \$14 million.



Converse Hall



Cut away view of proposed double-height Tremont Temple entrance/Converse Hall pre-function area

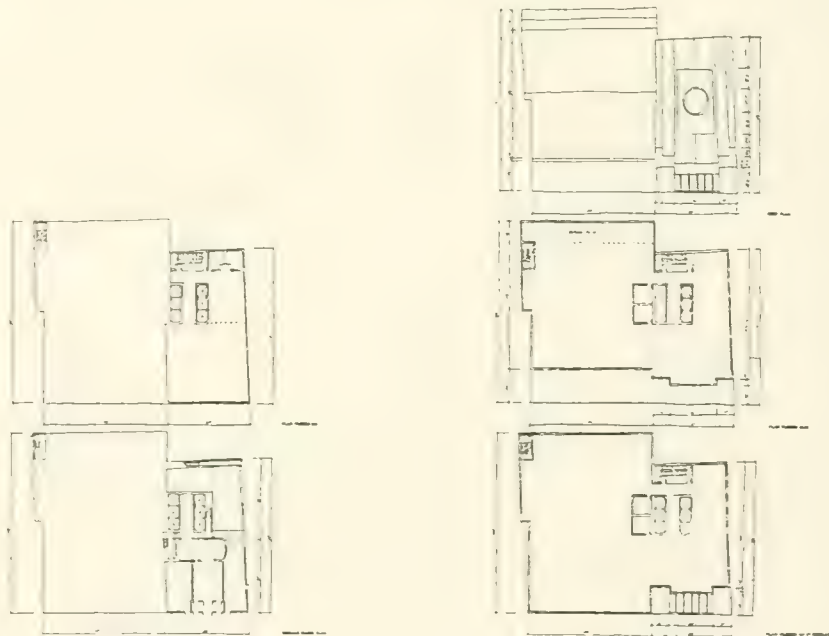
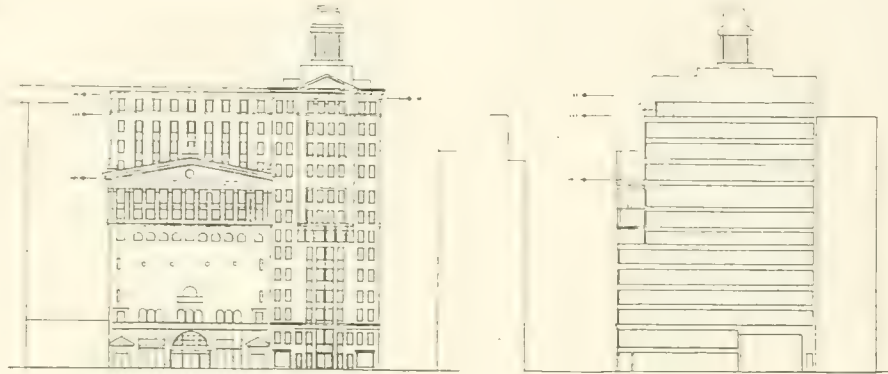
SCHEME 1 134'-0" high, PAR 10

This alternative conforms to the proposed height, of 134'-0", for Tremont Temple/90 Tremont Street as stipulated by the Scoping Determination for Option B of the project.

The four new stories constructed above the Temple are set 24'-0" back from its Tremont Street facade. Thirteen stories of new construction occupy the 90 Tremont Street site with setbacks at the seventh, eighth and thirteenth floors as indicated on the accompanying elevation, transverse section, axonometric drawing and floor plans.

The floor-to-floor heights of this scheme are 12'-0", above the 9th floor.

While this scheme is the lowest of the four schemes presented in this booklet, it is the one which encroaches the most on the Temple itself.



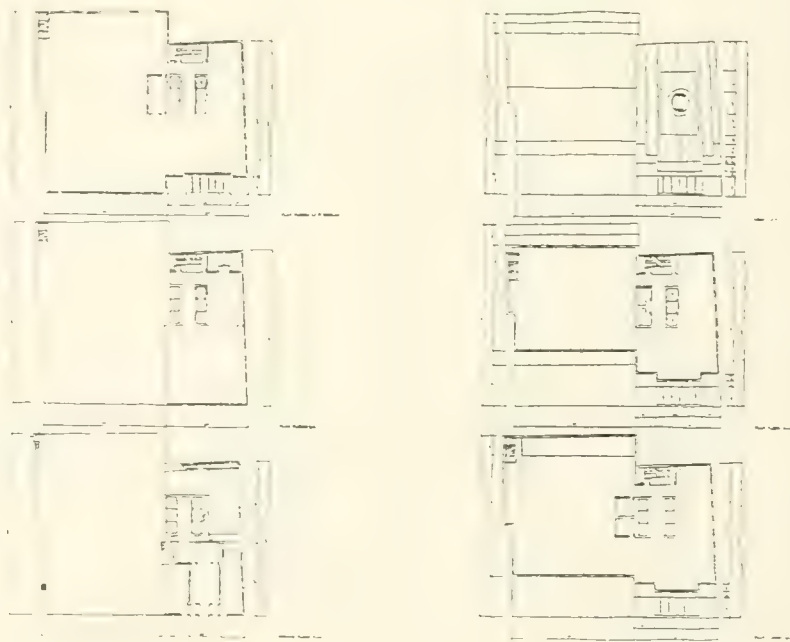
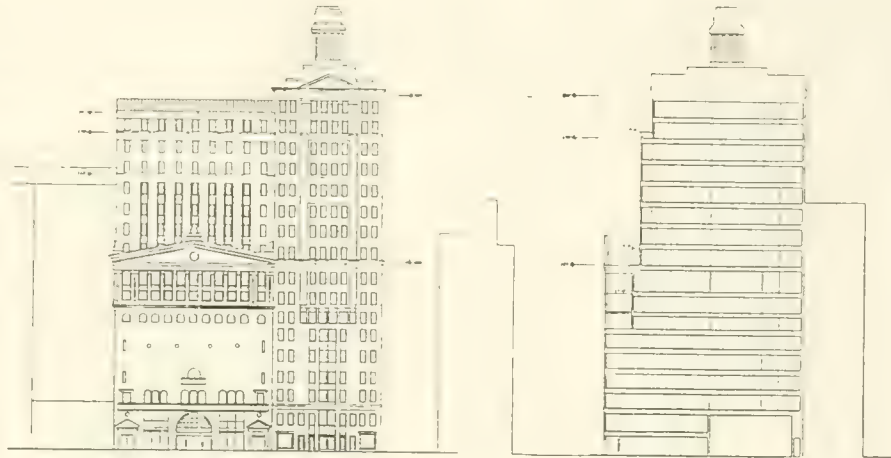
SCHEME 11: 203'-0" high, FAH 11

This scheme reaches a height of 203'-0" on the 90 Tremont site while it remains one story lower, at 191'-0", over Tremont Temple and represents the midpoint of the range of heights stipulated by the Seeping Determination for Option A of the project.

Seven stories of new construction rise above the Temple, four of which are set back 30'-0" from its Tremont Street facade. A further ten-foot setback occurs at the 156'-0" height. Seventeen stories of new construction occupy the 90 Tremont Street site with setbacks at the seventh, eighth, tenth and sixteenth floors as indicated on the accompanying elevation, transverse section, axonometric drawing and floor plans.

The floor-to-floor heights of this scheme are 12'-0", above the ninth floor.

This scheme, like that at 155'-0", is characterized by a uniform slab-like appearance across the two sites because both components are very close to the same height



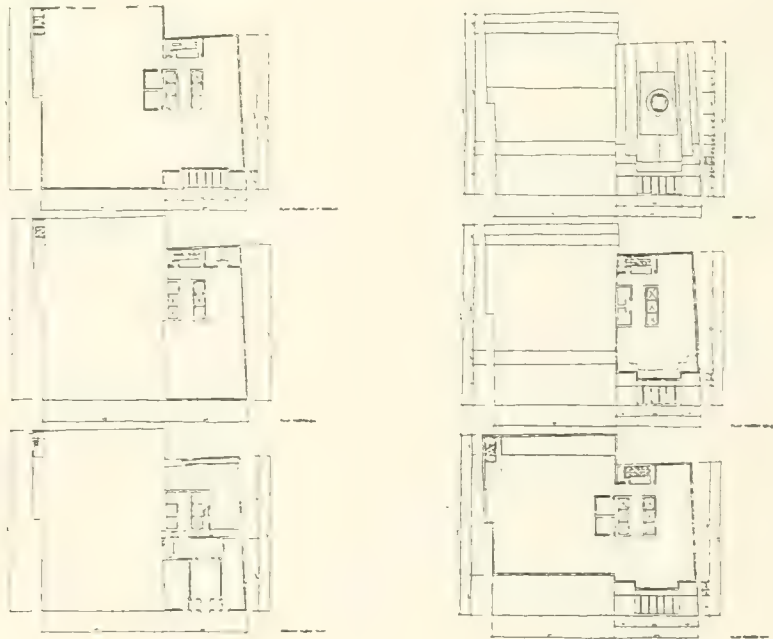
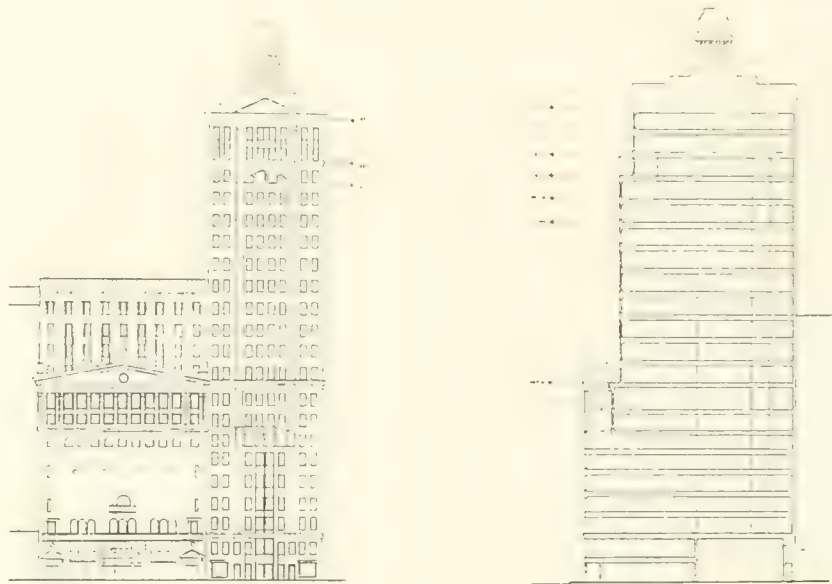
SCHEME 111: 251'-0" high, FAR 11

This scheme, which is comprised of the same floor area as in scheme 11, reaches a height of 251'-0" on the 90 Tremont site while remaining at 150'-0" over Tremont Temple.

Four stories of new construction rise above the Temple, set back 35'-0" from its Tremont Street facade. To achieve the minimum required project size, the remaining floor area is contained in twenty-one stories of new construction on the 90 Tremont Street site, with setbacks at the seventh, eighth, tenth, nineteenth and twentieth floors as indicated on the accompanying elevation, transverse section, axonometric drawing and floor plans.

The floor-to-floor heights of this scheme are 12'-0" above the ninth floor.

This scheme creates a fortuitously sited, slender tower set back from the corner of Tremont and Besworth streets, while it minimizes any new mass built above the Temple itself.



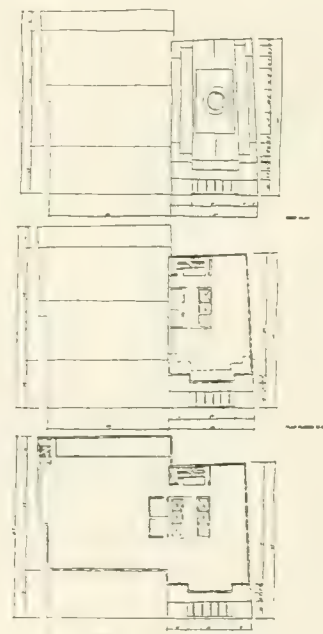
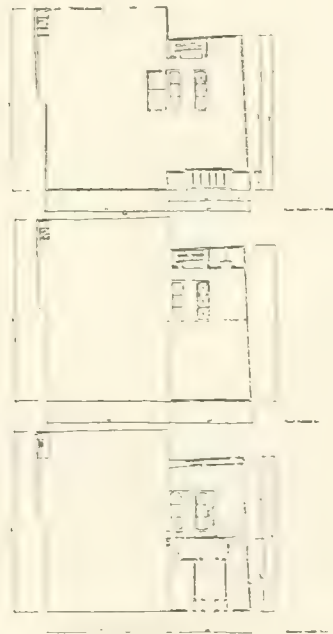
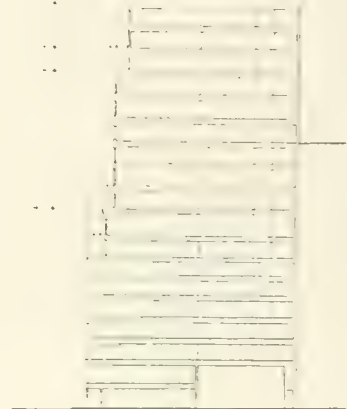
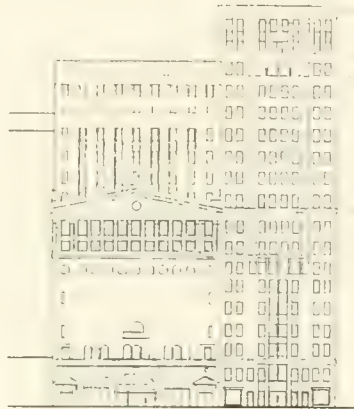
SCHEME IV 215'-0" high, FAR 11

This scheme, which is comprised of the same floor area as in both Schemes II and III, represents a massing configuration midway between the slab-like Scheme II and slender tower of Scheme III. This scheme reaches a height of 215'-0" on the 90 Tremont site while it remains three stories lower, at 179'-0", over Tremont Temple.

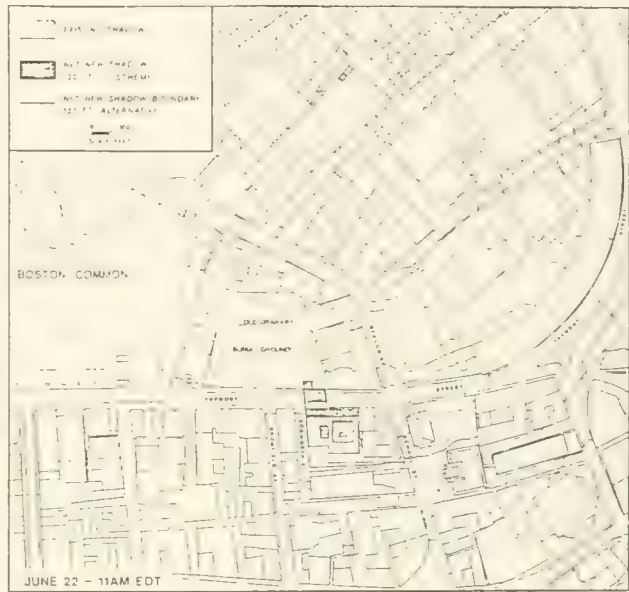
Six stories of new construction rise above the Temple, set back 28'-0", the depth of the Temple return, from its Tremont Street facade. Eighteen stories of new construction occupy the 90 Tremont site with setbacks at the seventh, eighth, tenth, sixteenth and seventeenth floors as indicated on the accompanying elevation, transverse section, axonometric drawing and floor plans.

The floor-to-floor heights of the scheme are 12'-0", above the ninth floor.

A distinct beacon image remains possible above the 90 Tremont site owing to the difference in height and massing between the slender tower and the blockier mass over the Temple.

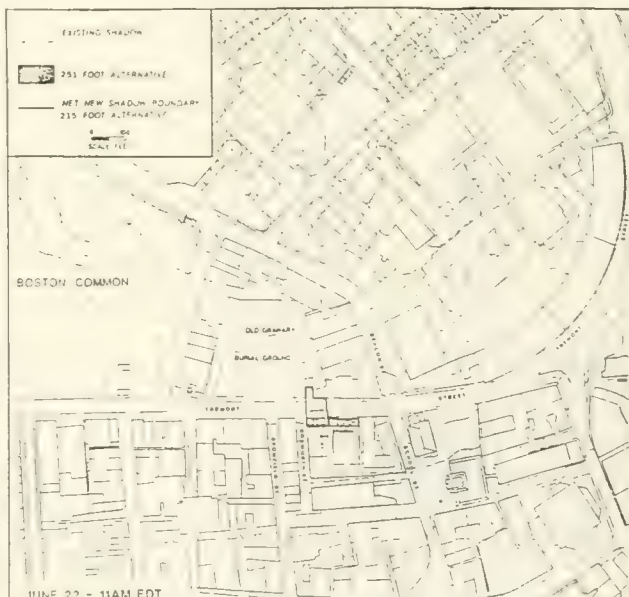


PRELIMINARY SHADOW STUDIES



155'-0", 201'-0" SCHEMES

14

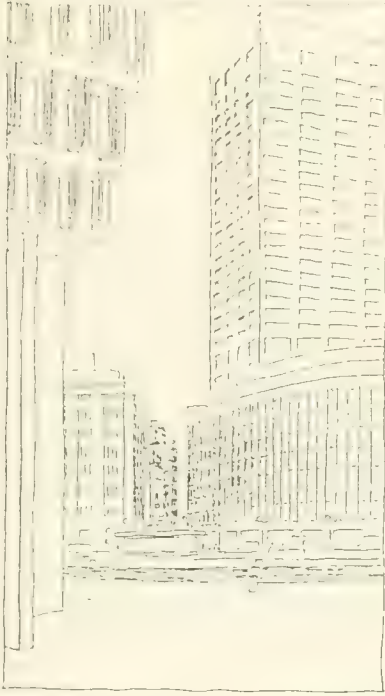


215'-0", 251'-0" SCHEMES

15

PEDESTRIAN LEVEL PERSPECTIVES

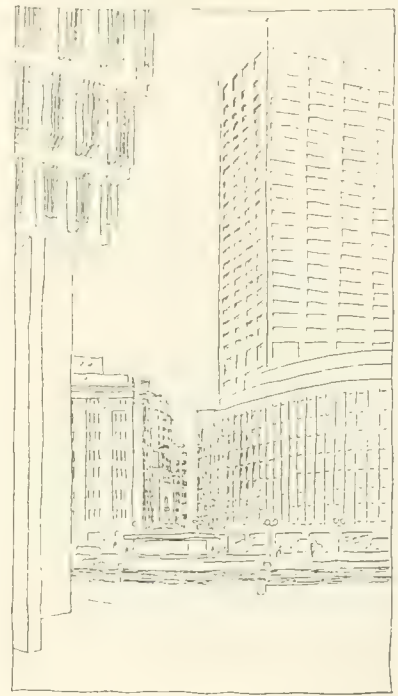
The following views of the proposed project are rendered for each of the four schemes.



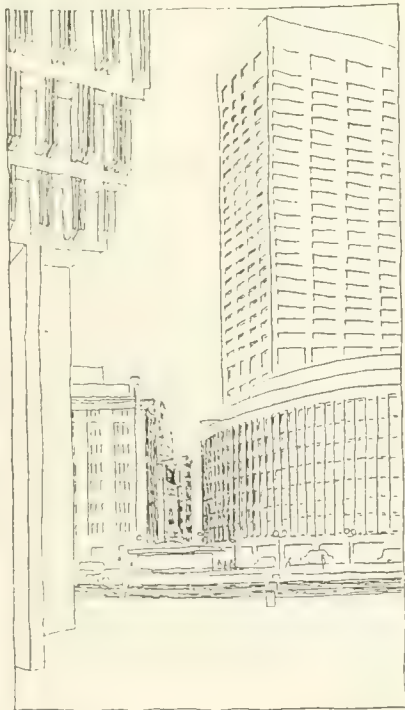
VIEW FROM CITY HALL

155'-0" SCHEME

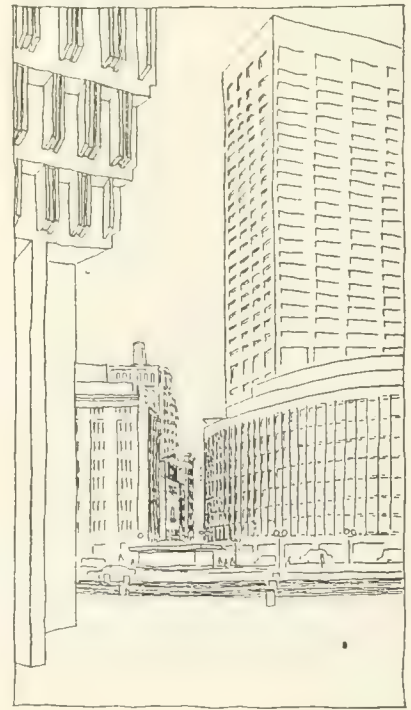
16



203'-0" SCHEME

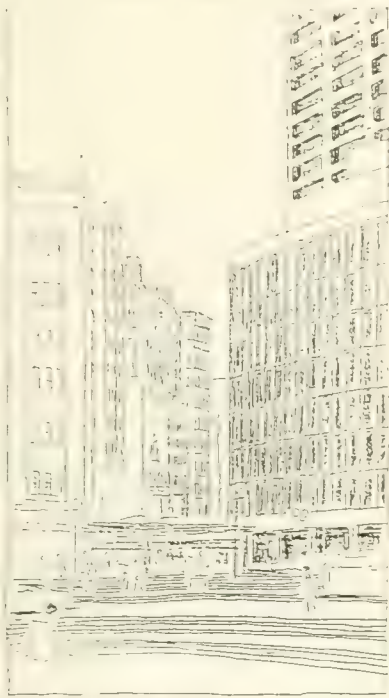


215'-0" SCHEME



251'-0" SCHEME

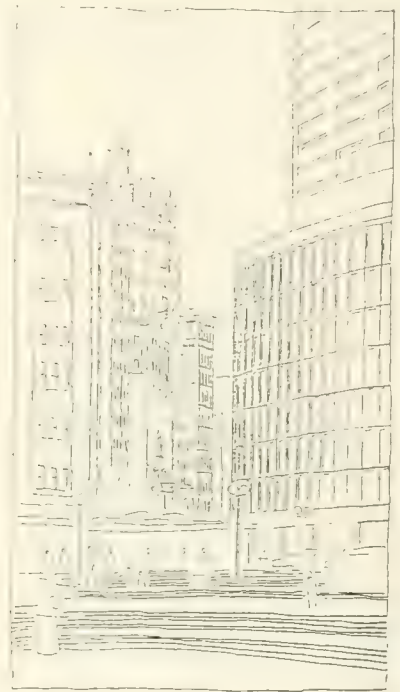
17



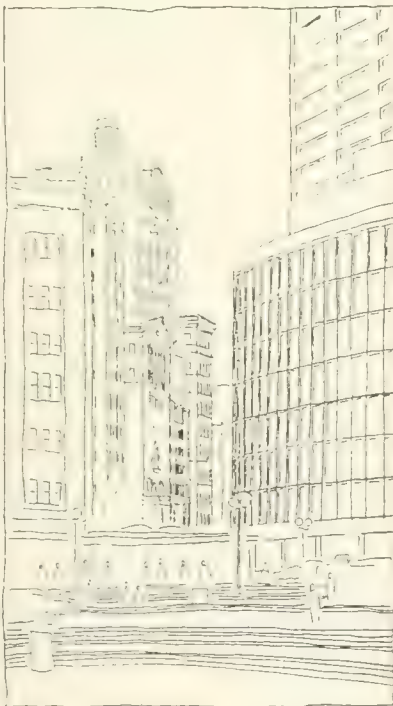
VIEW FROM CITY HALL PLAZA

155'-0" SCHEME

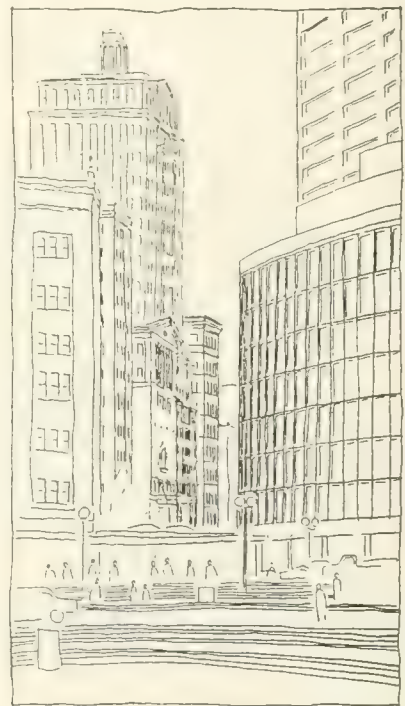
18



203'-0" SCHEME



215'-0" SCHEME



251'-0" SCHEME

19



TREMONT STREET LOOKING SOUTH 155'-0" SCHEME

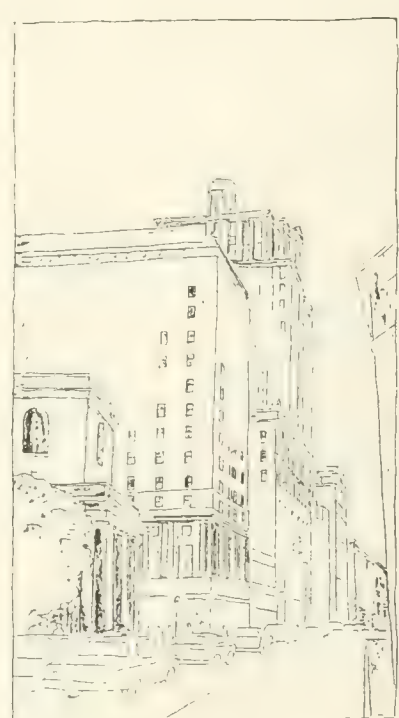
20



203'-0" SCHEME



215'-0" SCHEME



251'-0" SCHEME

21



155'-0" SCHEME
LOOKING EAST FROM GRANARY BURIAL GROUND

22



203'-0" SCHEME



215'-0" SCHEME



251'-0" SCHEME

23



TREMONT STREET LOOKING NORTH 155'-0" SCHEME

24



203'-0" SCHEME



215'-0" SCHEME



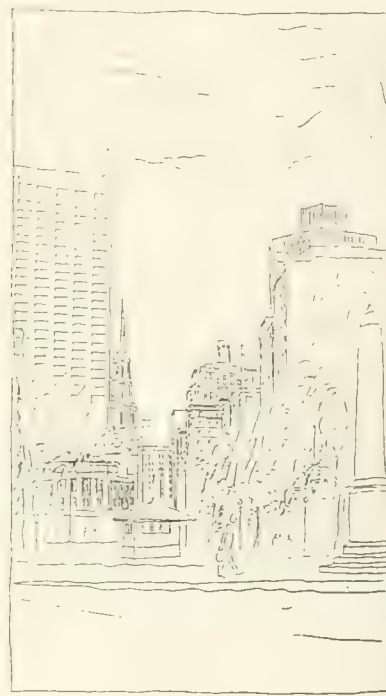
251'-0" SCHEME

25

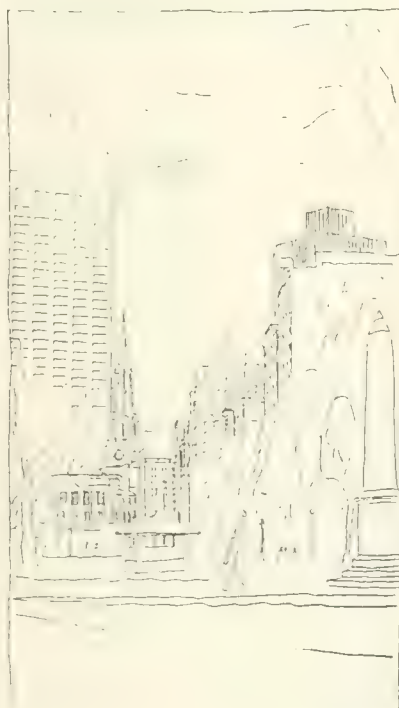


VIEW NORTH FROM BOSTON COMMON

155'-0" SCHEME



203'-0" SCHEME



215'-0" SCHEME



251'-0" SCHEME



VIE- NORTH FROM COLUMBUS AVENUE AND BERKELEY STREET

155'-0" SCHEME

28



203'-0" SCHEME



215'-0" SCHEME



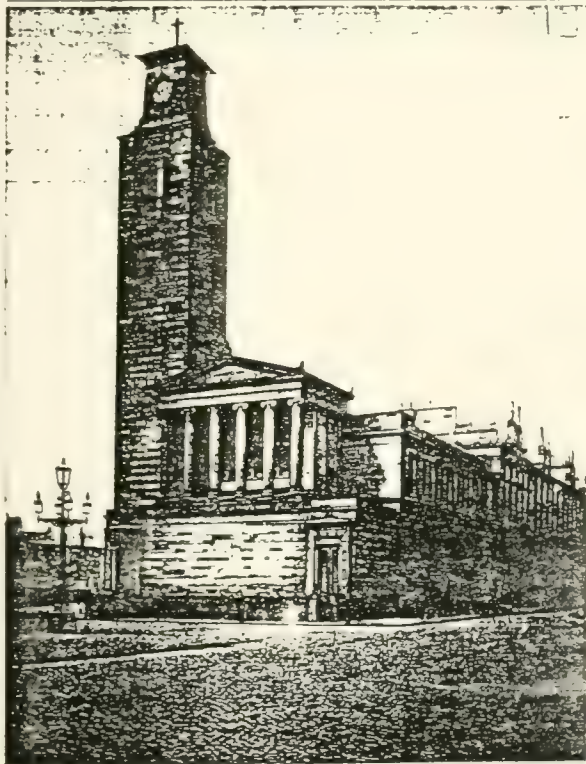
251'-0" SCHEME

29

The following photographs illustrate
appropriate structural and complementary base-
ment building configurations.



JUDSON MEMORIAL CHURCH
McKim, Mead & White, 1883-93
New York, New York



CALEDONIA ROAD METHODIST CHURCH
Alexander Thompson, 1856
Glasgow, Scotland



NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY
Nathaniel J. Bradlee, Ca. 1874
Boston, Massachusetts



METROPOLITAN LIFE TOWER
Napoleon LeBrun & Sons, 1909
New York, New York

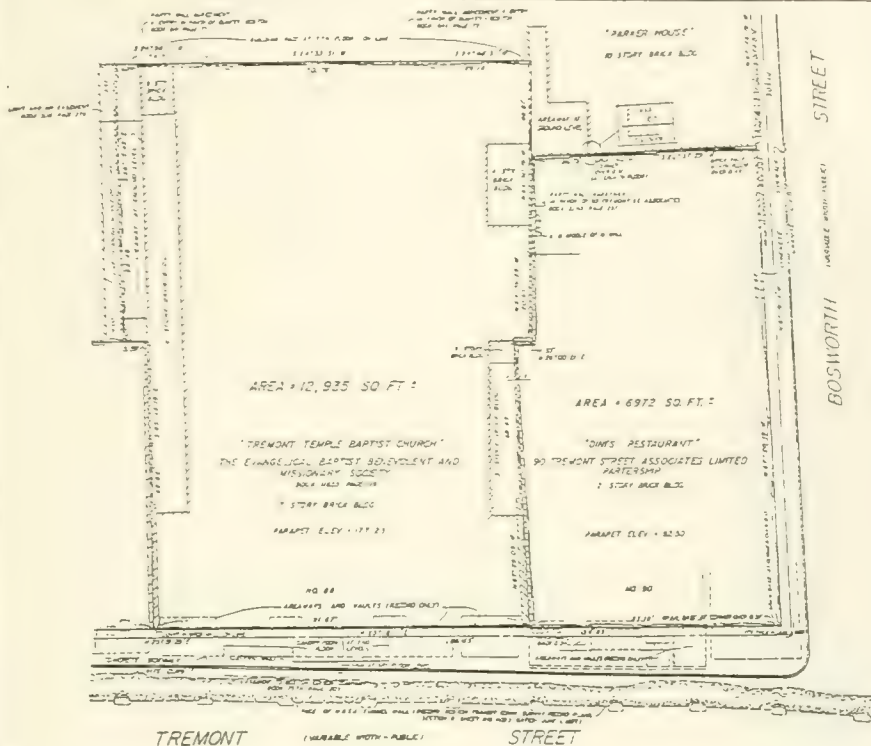


ST. BARTOLOMEW'S CHURCH
Bartram Goodhue, 1919
New York, New York

An early pre-schematic design for
the slender tower



TREMONT TEMPLE/90 TREMONT STREET -
Robert A.M. Stern Architects, 1988
Boston, Massachusetts



34

IV ZONING

For purposes of calculating the floor areas and floor area ratios listed below, zoning gross area measurements and the following site areas were used: Tremont Temple @ 12,949 square feet and 90 Tremont Street @ 6,972 square feet.

SCHEME	HEIGHT	GROSS COMM AREA	GROSS TEMPLE AREA	TOTAL GROSS AREA	GROSS FAR	BONUS AREA (=1 FAR)	TOTAL NET AREA	NET FAR
I	155'-0"	150,000	46,600	196,600	9.87	19,920	196,600	9.87
II	203'-0"	192,000	46,600	238,600	11.98	19,920	218,680	10.98
III	251'-0"	191,000	46,600	237,600	11.93	19,920	217,680	10.93
IV	215'-0"	190,000	46,400	236,600	11.88	19,920	216,680	10.88

35

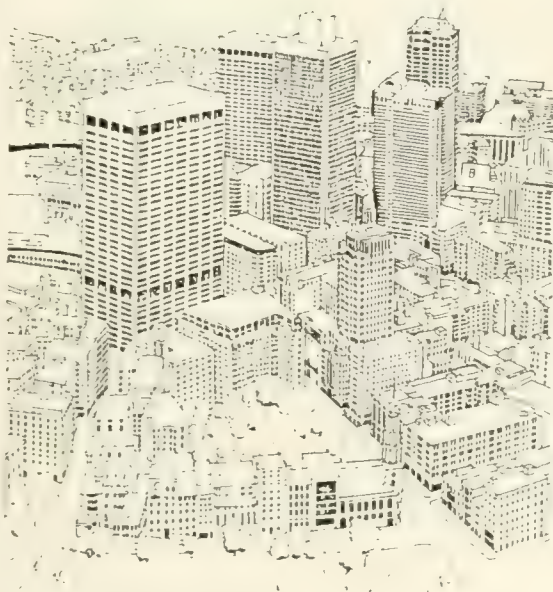
V. ECONOMIC

SCHEME	PAYMENT TO TEMPLE	HOUSING FUNDS	JOB CREATION FUND
I	\$6,015,000	\$239,000	\$62,000
II	\$7,250,000	\$385,000	\$100,000
III	\$7,250,000	\$385,000	\$100,000
IV	\$7,250,000	\$385,000	\$100,000

NOTE: Refer to Public Benefits Summary for more complete list of economic benefits



36



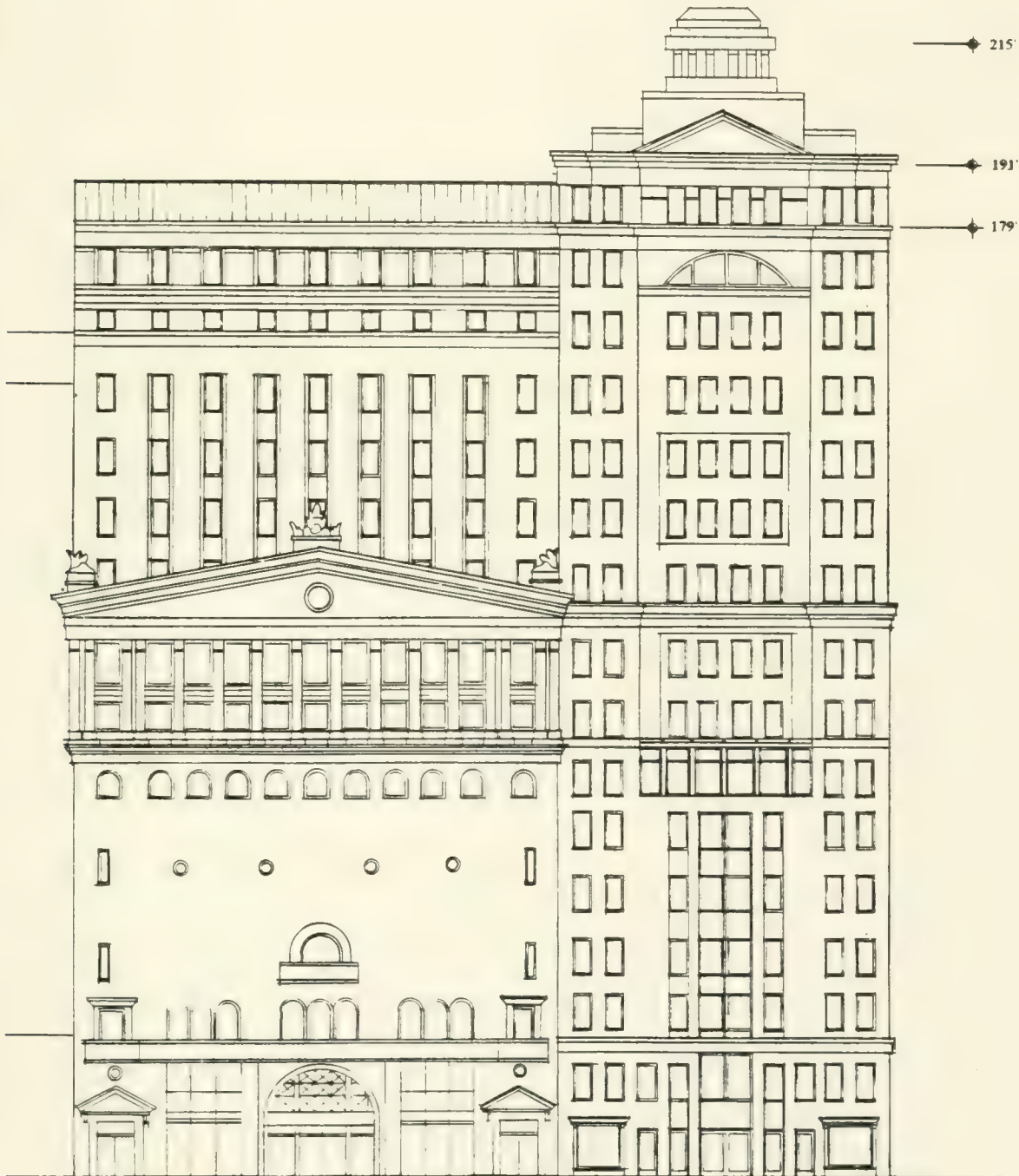
Notter, Finegold + Alexander, Inc.
77 North Washington Street
Boston, Massachusetts 02114

Robert A.M. Stern Architects
211 West 61st Street
New York, New York 10023

Jung/Brannen Associates, Inc.
177 Milk Street
Boston, Massachusetts 02109

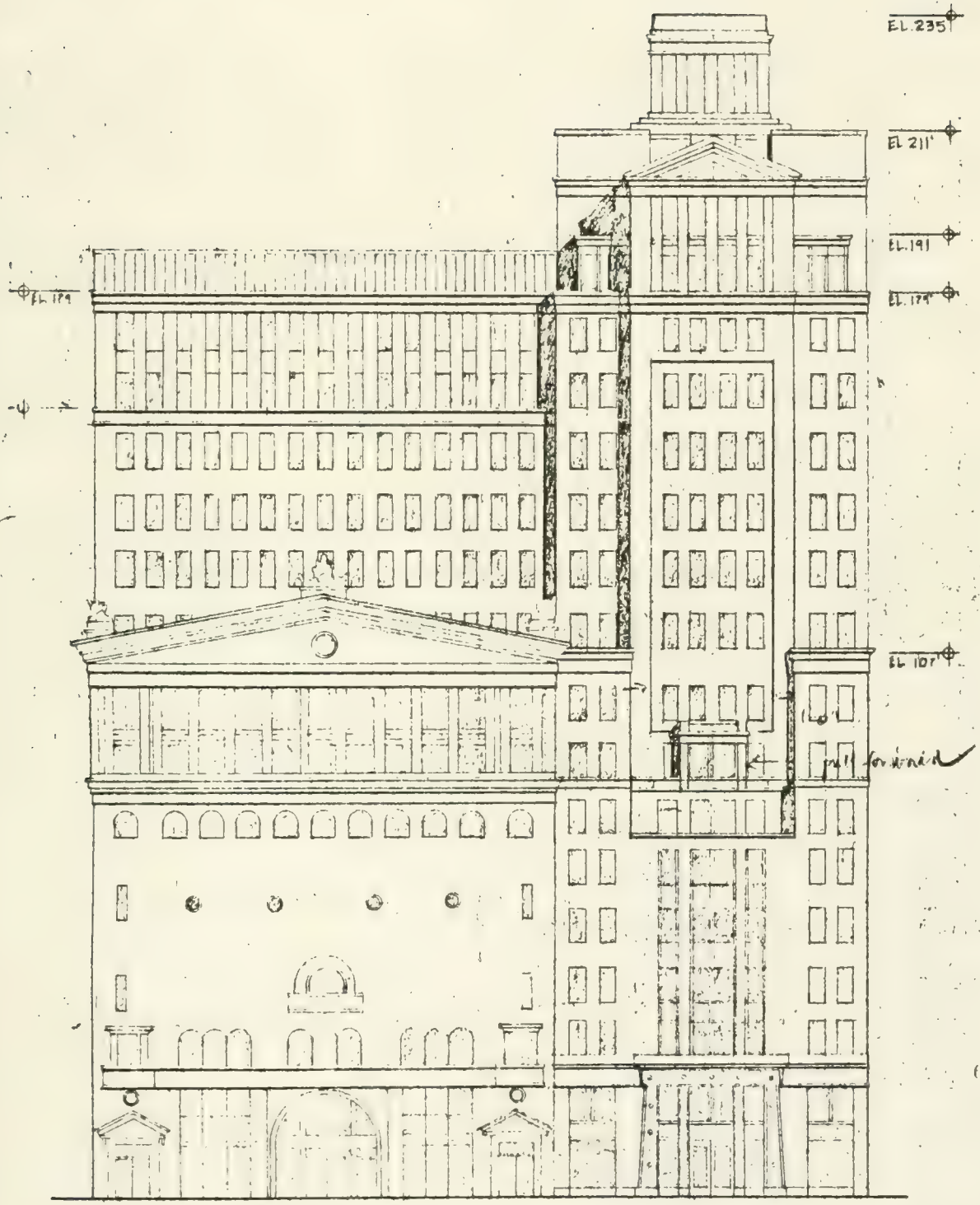
37

With the resolution of the general Tremont Temple/90 Tremont Street project envelope in the Spring, of 1989, numerous schematic design studies were generated for the project's rooftop and penthouse configurations which resulted in the current schematic design for the development. Figure 9.5-3 following presents reductions of several of the design options produced over the Spring and Summer months.



February 2, 1989

Figure 9.5-3



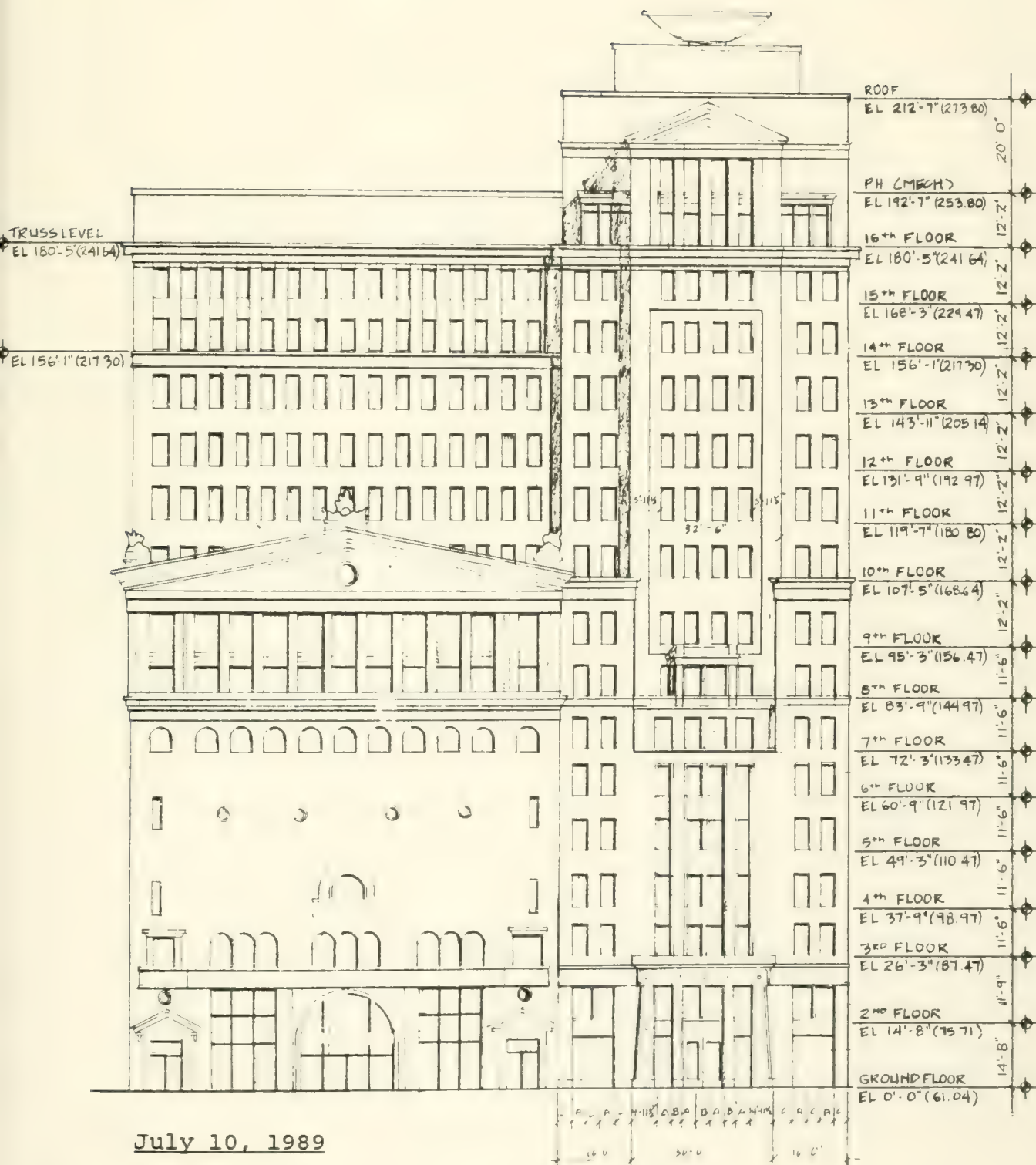
June 27, 1989

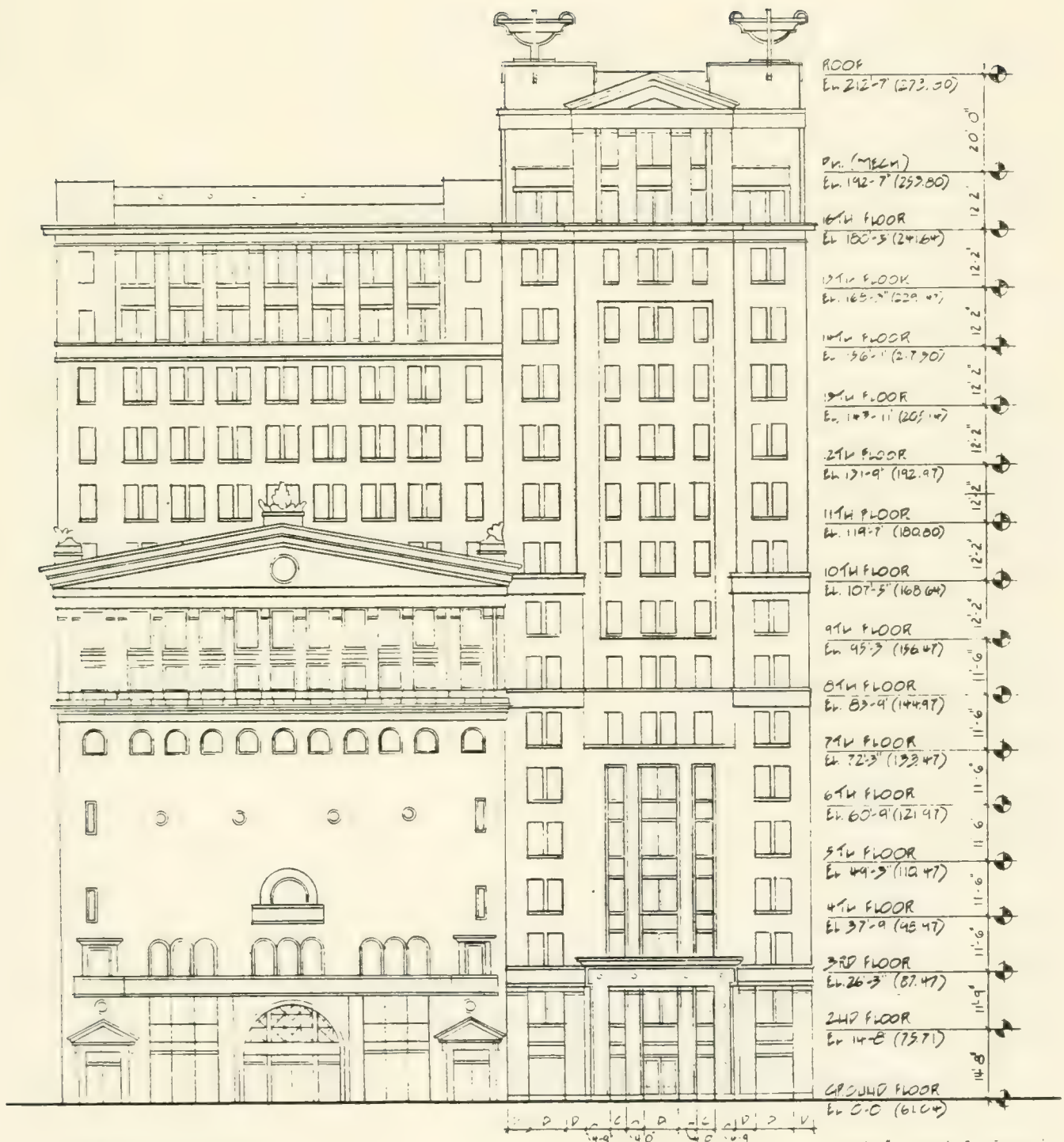


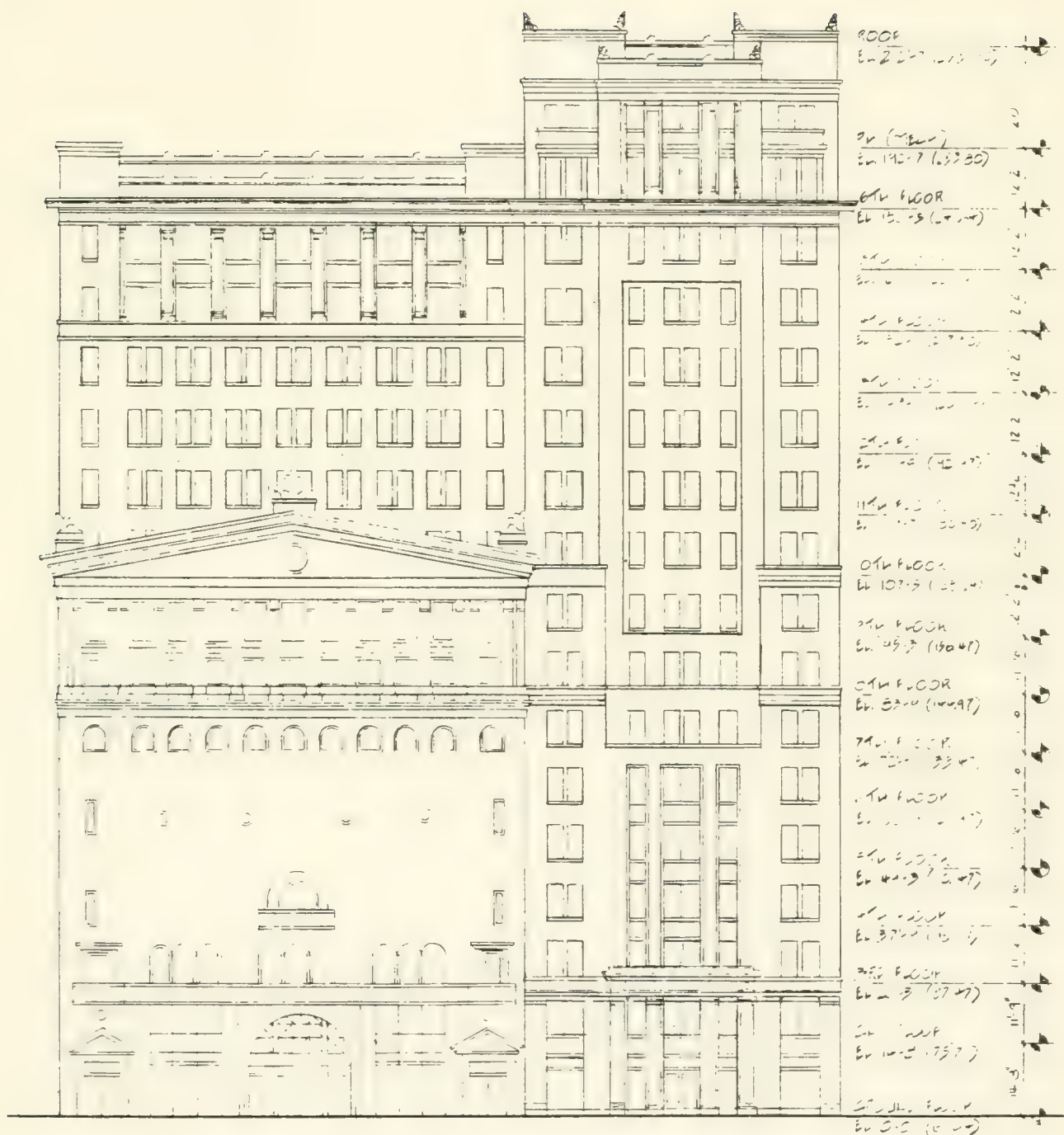




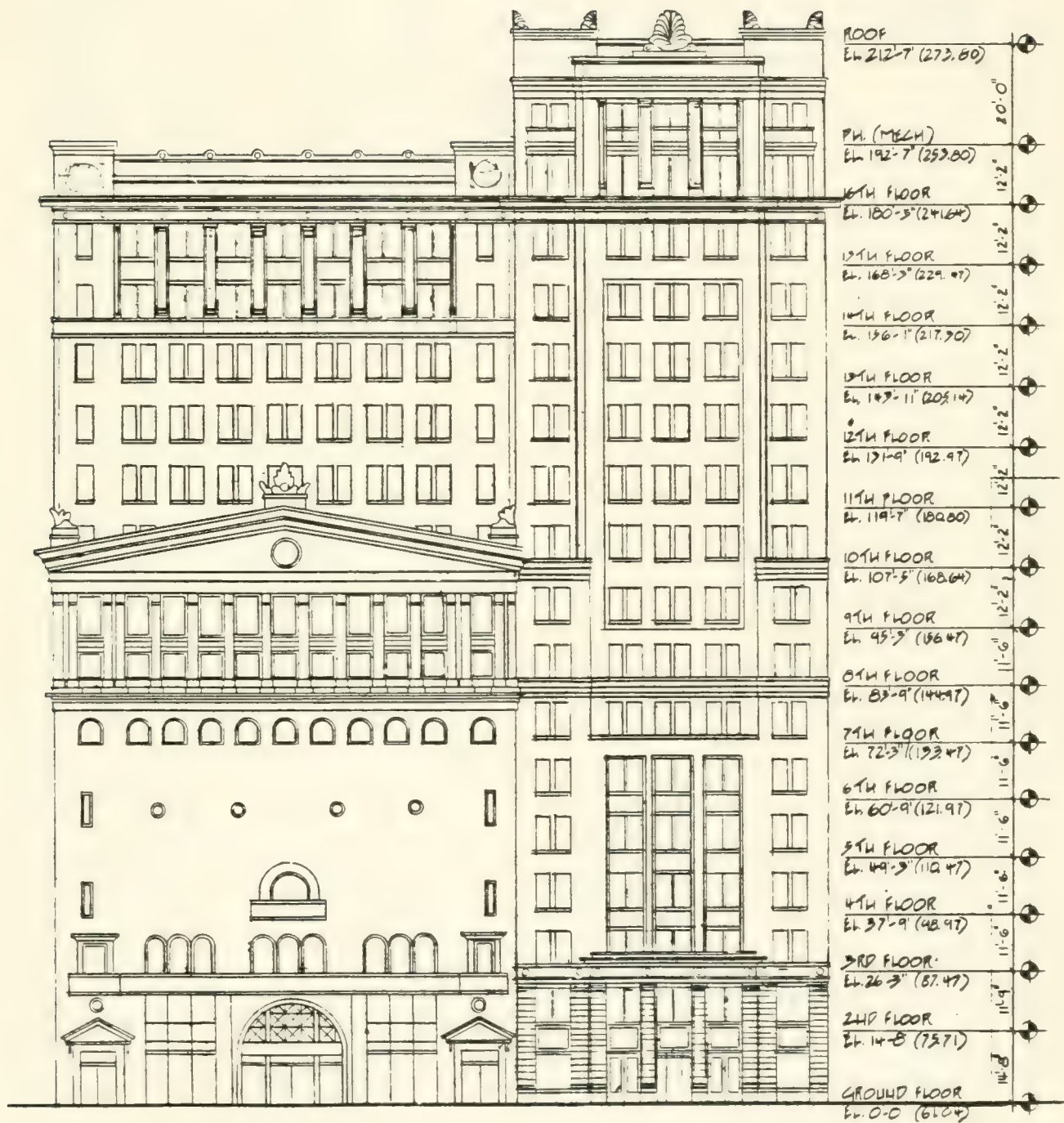








July 21, 1989

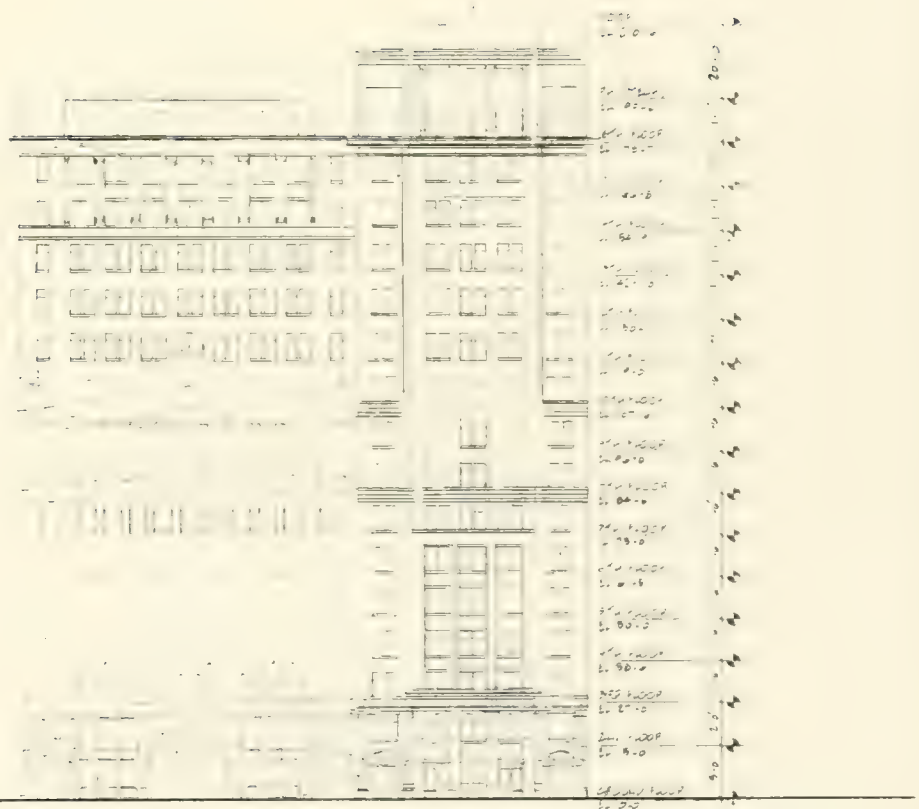


July 31, 1989

9.6 Schematic Designs

This section presents the following Schematic Design figures:

Figure 9.6-1	Proposed Project Tremont Street Elevation
Figure 9.6-2	Proposed Project Bosworth Street Elevation
Figure 9.6-3	Proposed Project East Elevation
Figure 9.6-4	Proposed Project North Elevation
Figure 9.6-5	As-of-Right Scheme Tremont Street Elevation
Figure 9.6-6	As-of-Right Scheme Bosworth Street Elevation
Figure 9.6-7	Substantial Accord Tremont Street Elevation
Figure 9.6-8	Substantial Accord Bosworth Street Elevation
Figure 9.6-9	North-South Section
Figure 9.6-10	East-West Section
Figure 9.6-11	Sub-Basement Floor Plan
Figure 9.6-12	Basement Floor Plan
Figure 9.6-13	Ground Floor Plan
Figure 9.6-14	Second Floor Plan
Figure 9.6-15	Floors 3-7 Floor Plan
Figure 9.6-16	Floors 8-10 Floor Plan
Figure 9.6-17	Floors 11-16 Floor Plan
Figure 9.6-18	Penthouse Floor Plan



TREMONT STREET ELEVATION

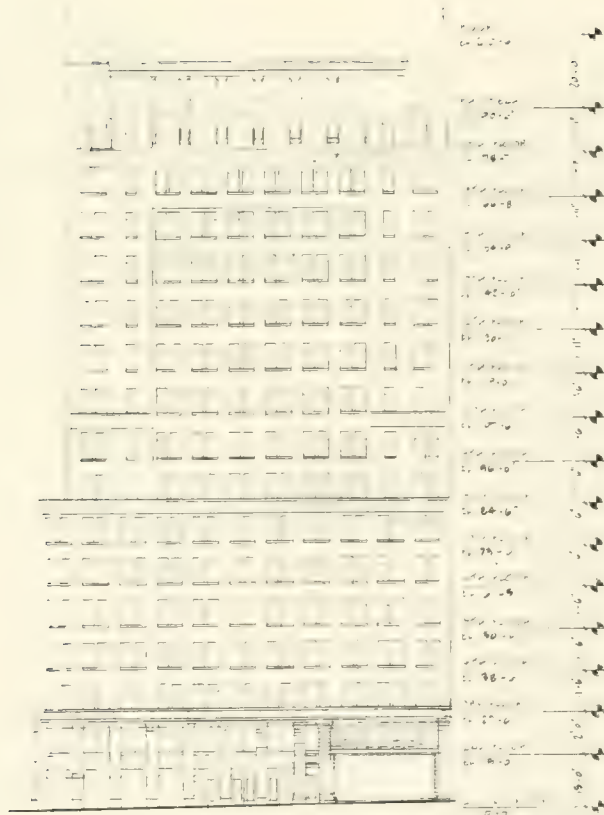
· NINETY TREMONT STREET ·

BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 8 4 DECEMBER 1989

ROBERT A. M. STERN ARCHITECTS
IN ASSOCIATION WITH
JUNG BRANNEN ASSOCIATES, INC.

Figure 9.6-1



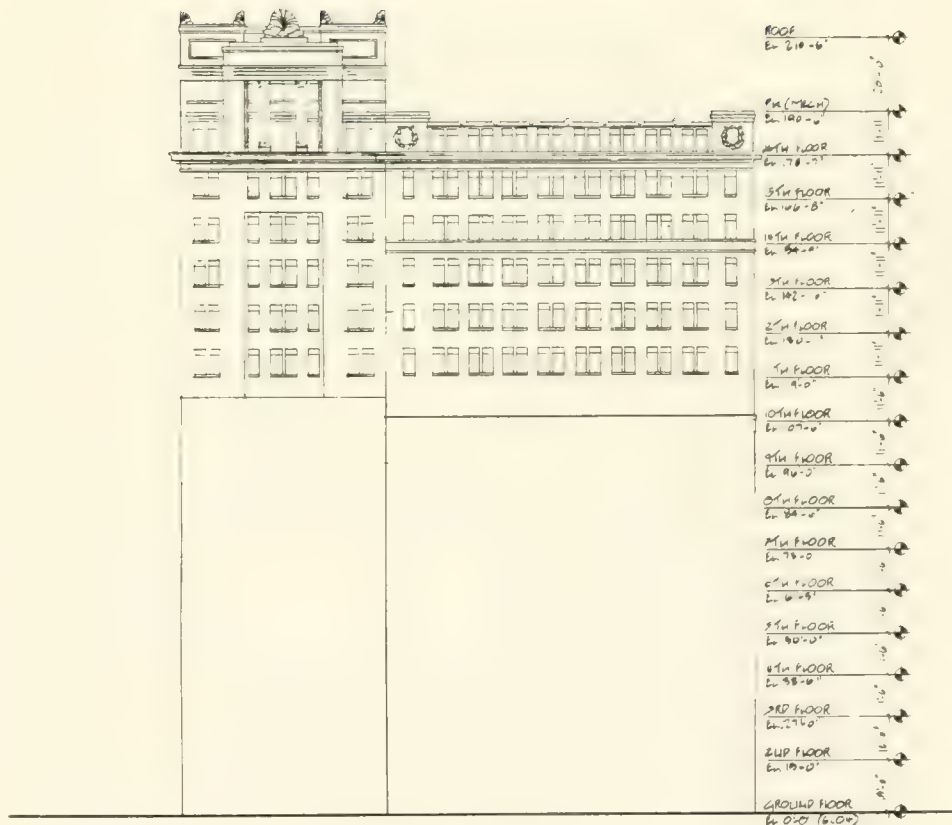
BOSWORTH STREET ELEVATION

NINETY TREMONT STREET

BOSTON, MASSACHUSETTS

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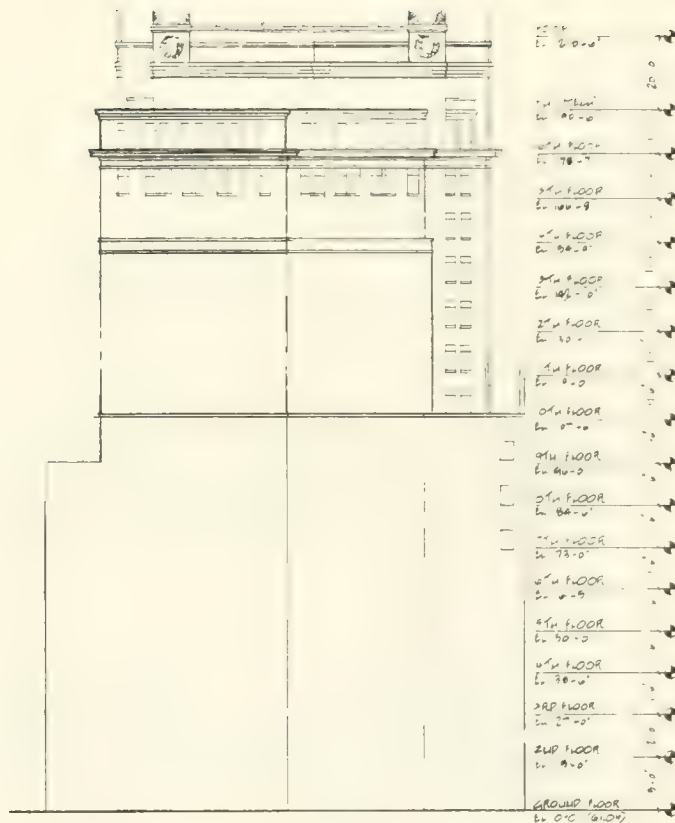
EAST ELEVATION

· NINETY TREMONT STREET · BOSTON, MASSACHUSETTS

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Figure 9.6-3



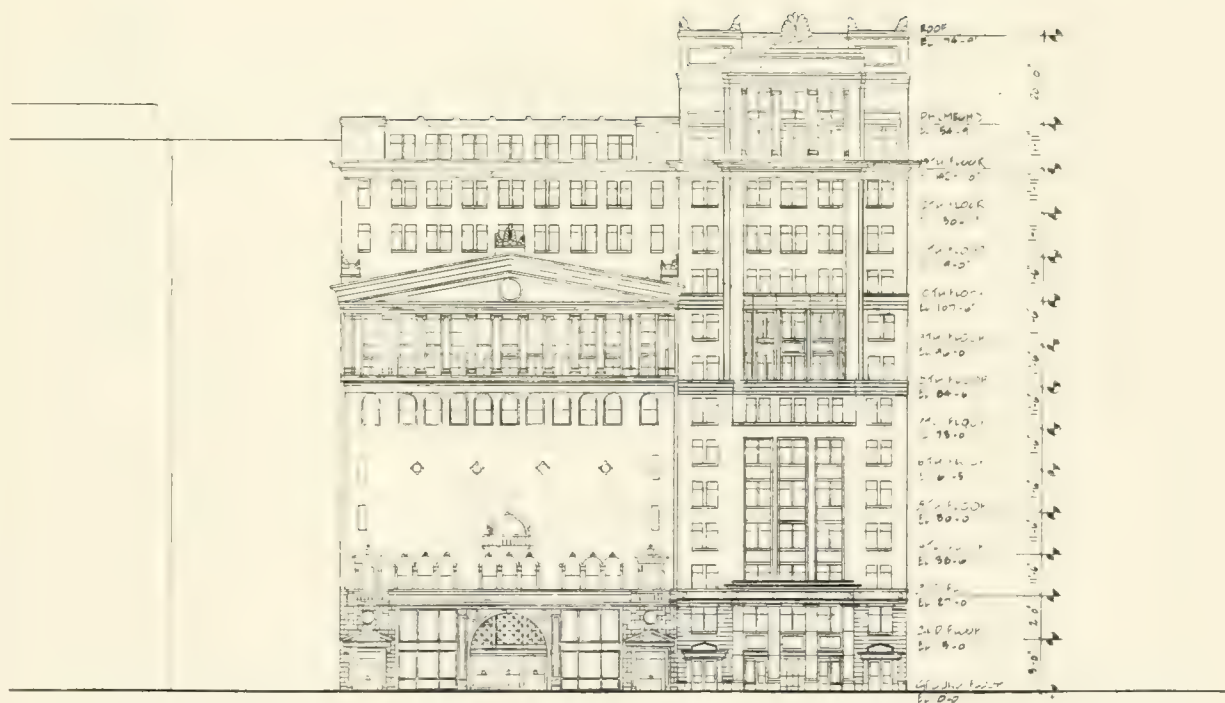
NORTH ELEVATION

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

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Figure 9.6-4

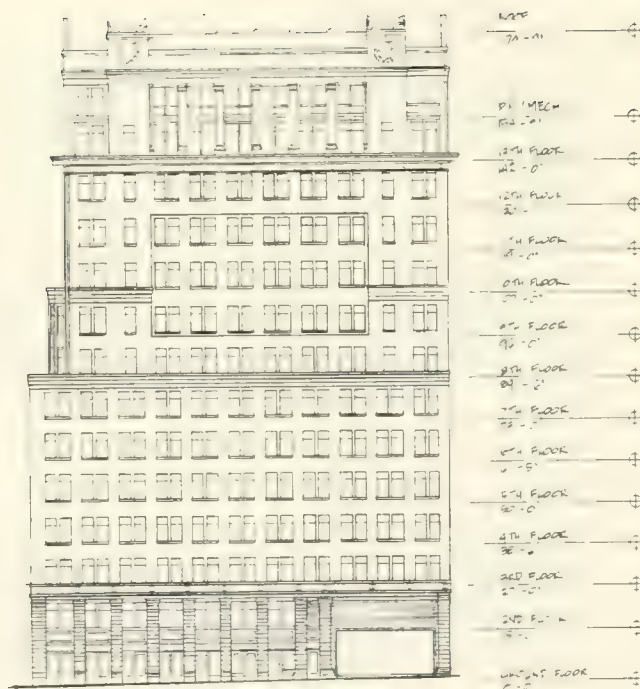


TREMONT STREET ELEVATION
AS - OF - RIGHT

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

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A - 22 4 DECEMBER 1989

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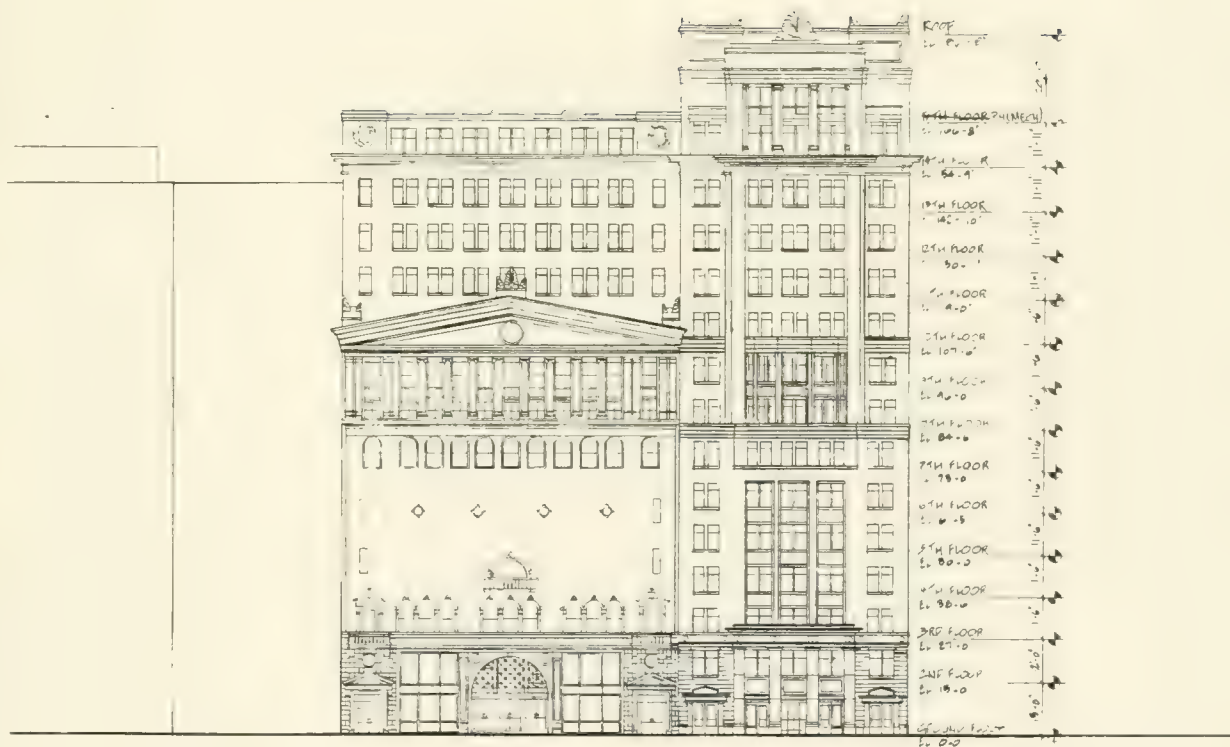


BOSWORTH STREET ELEVATION
AS - OF - RIGHT

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 23 4 DECEMBER 1989

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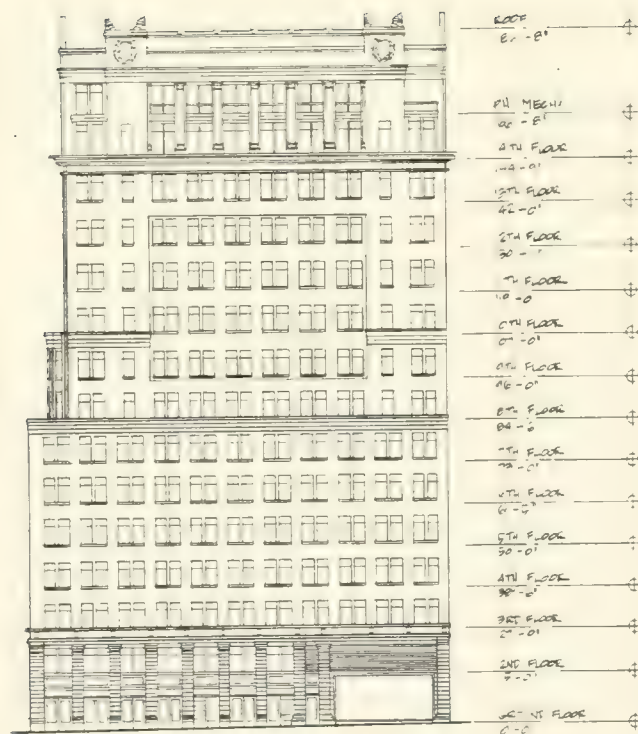
TREMONT STREET ELEVATION
SUBSTANTIAL ACCORD

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 24 4 DECEMBER 1989

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Figure 9.6-7



BOSWORTH STREET ELEVATION
SUBSTANTIAL ACCORD

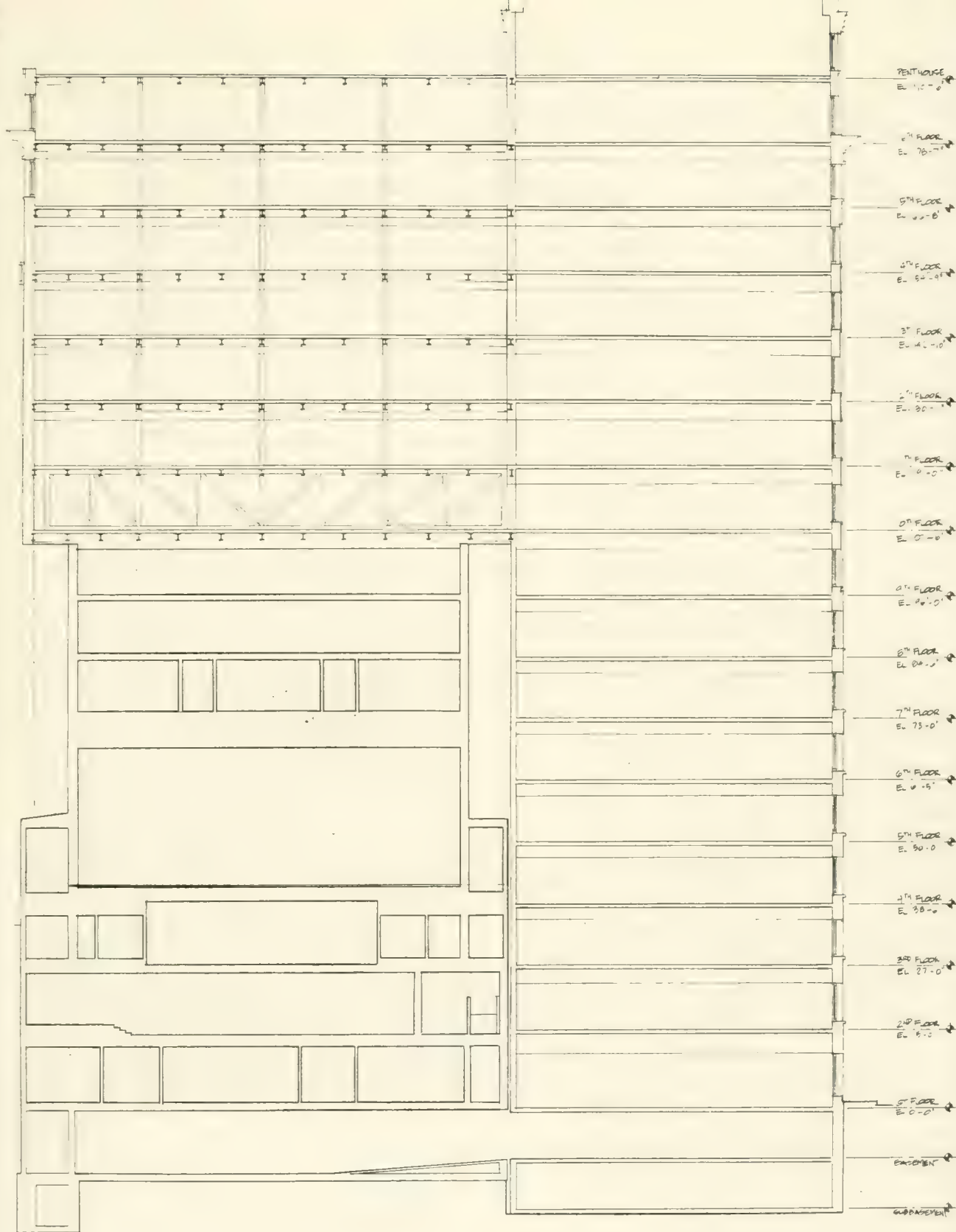
· NINETY TREMONT STREET ·

BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 25 4 DECEMBER 1989

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Figure 9.6-8



SECTION B - B (N - S)

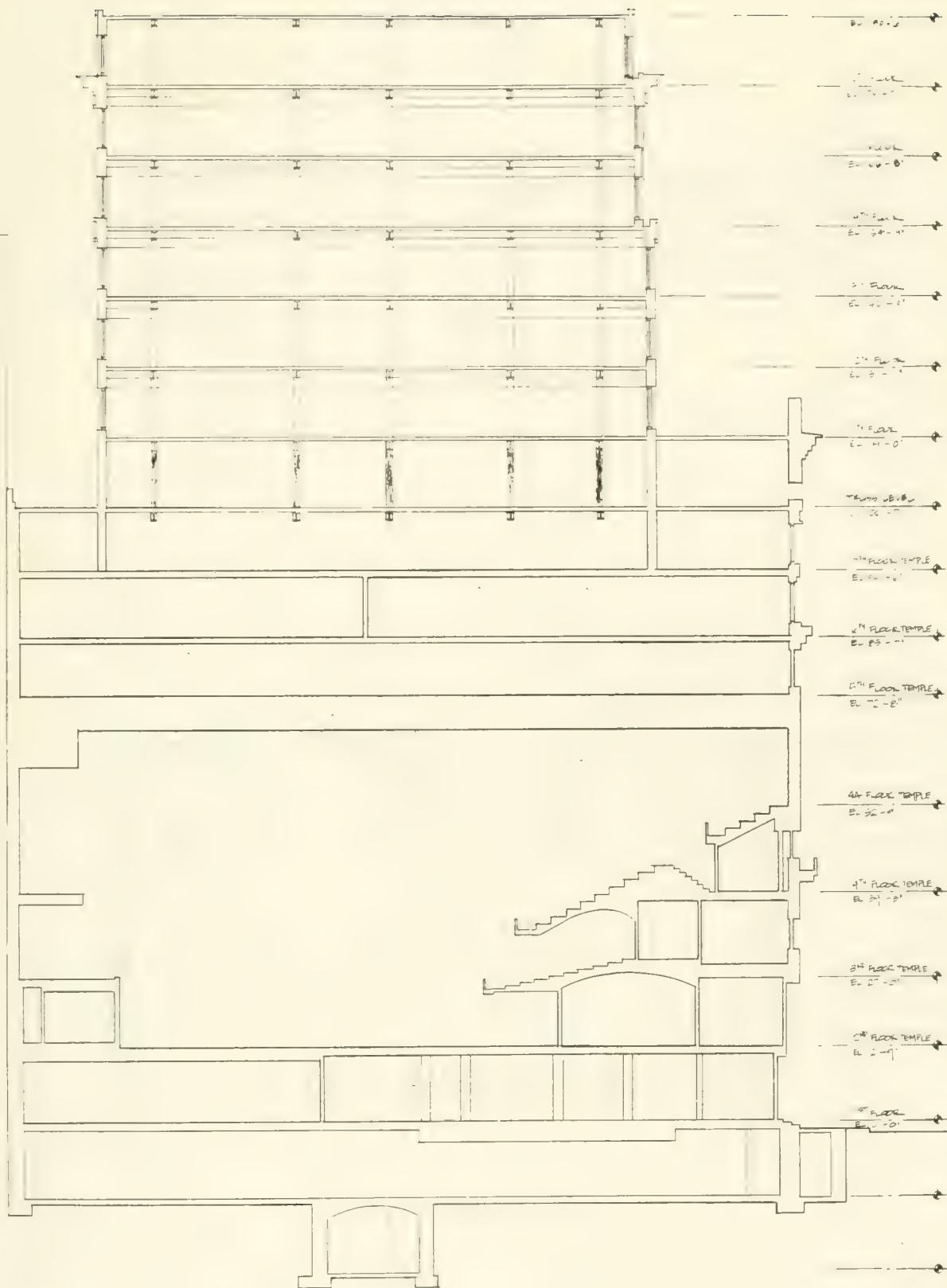
NINETY TREMONT STREET

BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 21 4 DECEMBER 1989

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Figure 9.6-9



SECTION A - A (E - W)

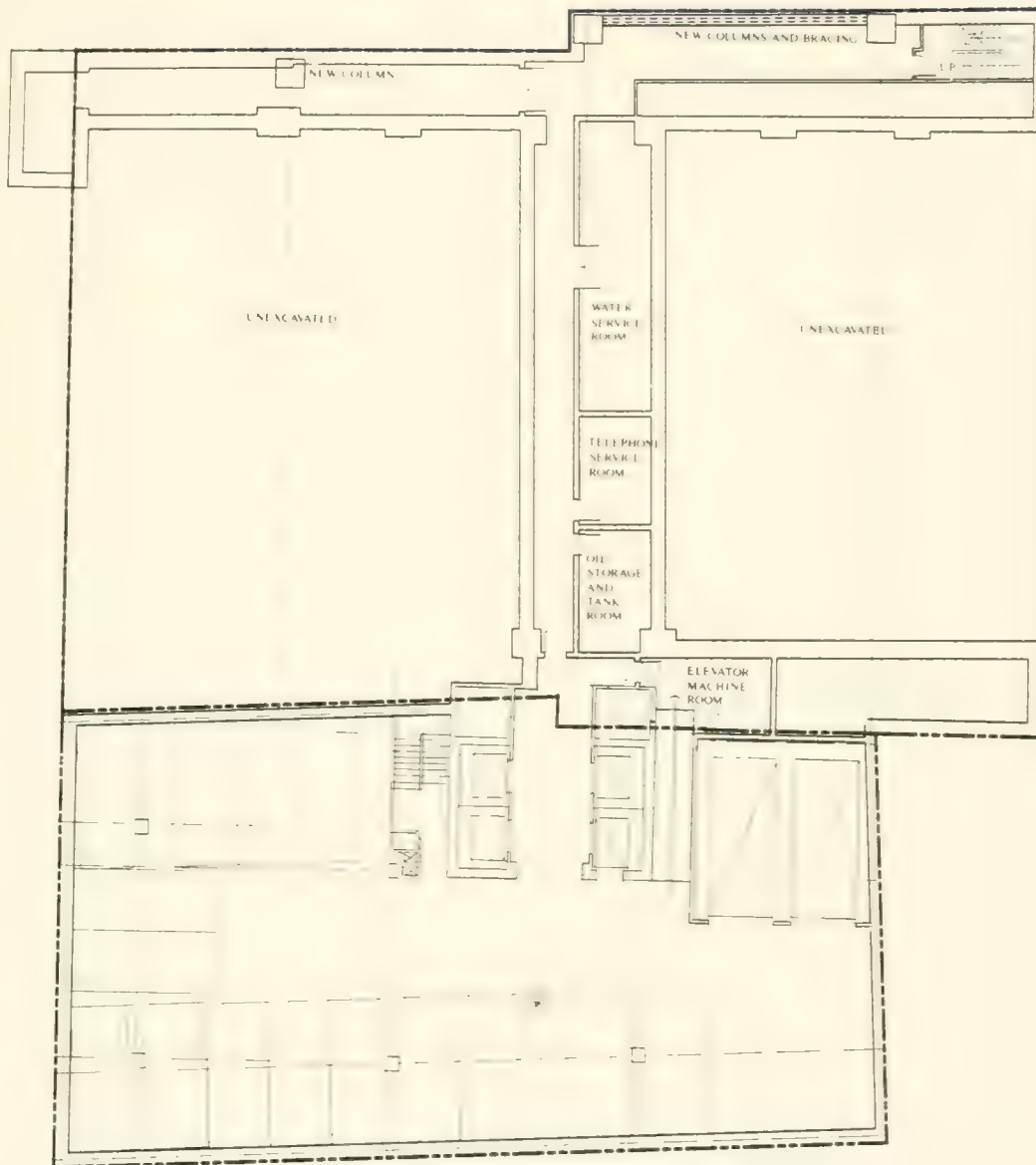
NINETY TREMONT STREET.

BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 20 4 DECEMBER 1989

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Figure 9.6-10



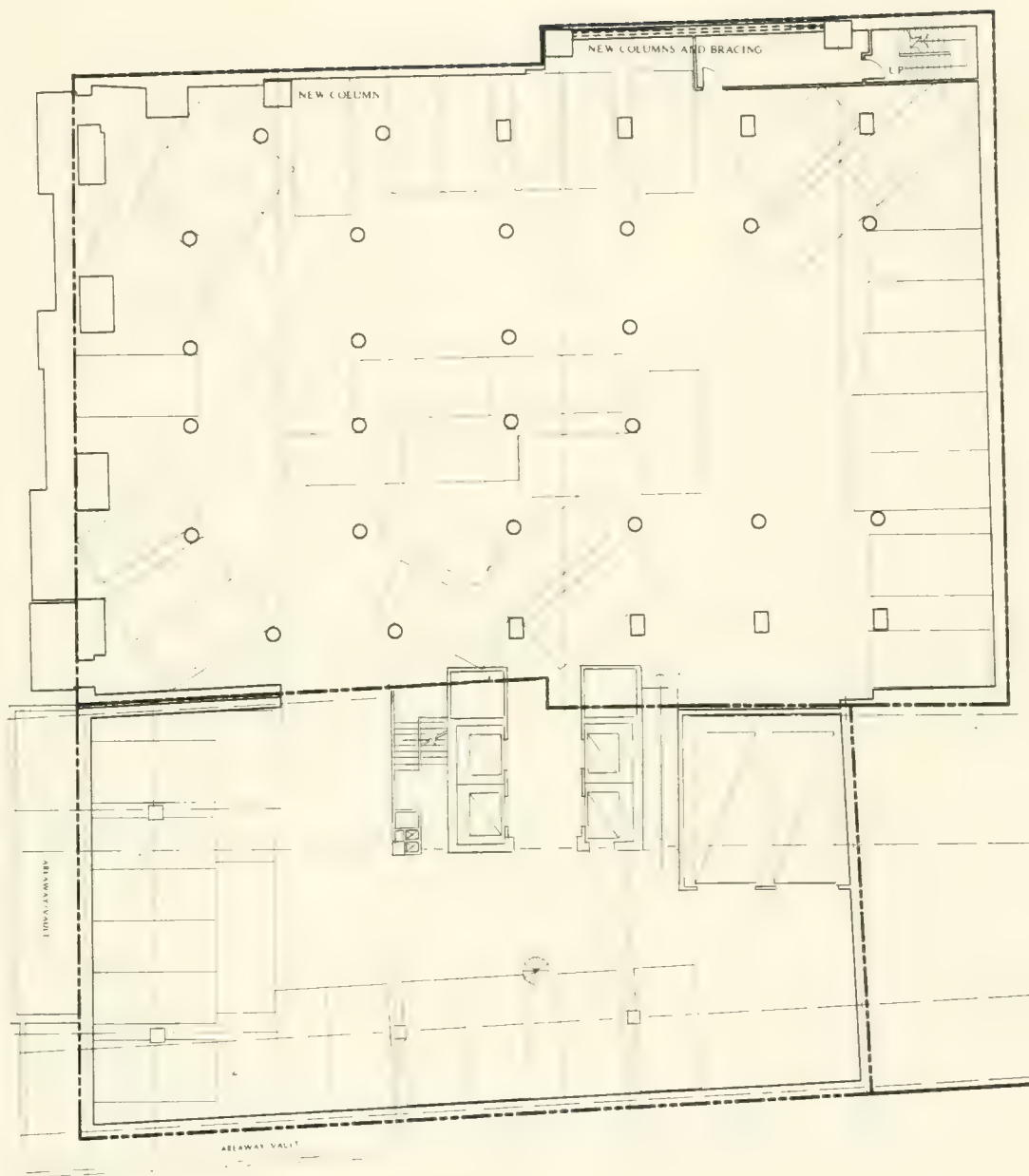
SUB-BASEMENT (P-2)

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

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Figure 9.6-11



BASEMENT (P-1)

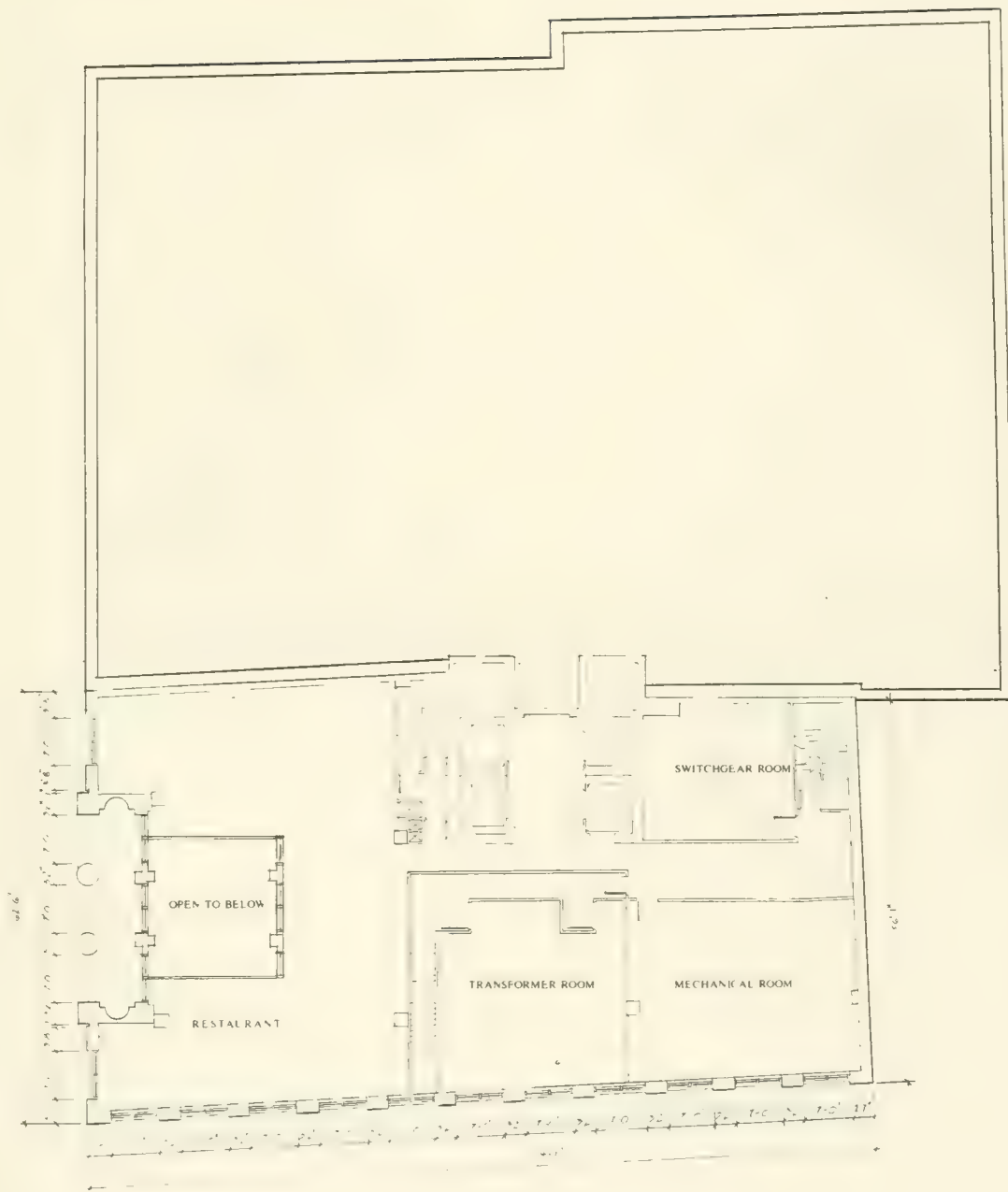
· NINETY TREMONT STREET ·

BOSTON, MASSACHUSETTS

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Figure 9.6-12



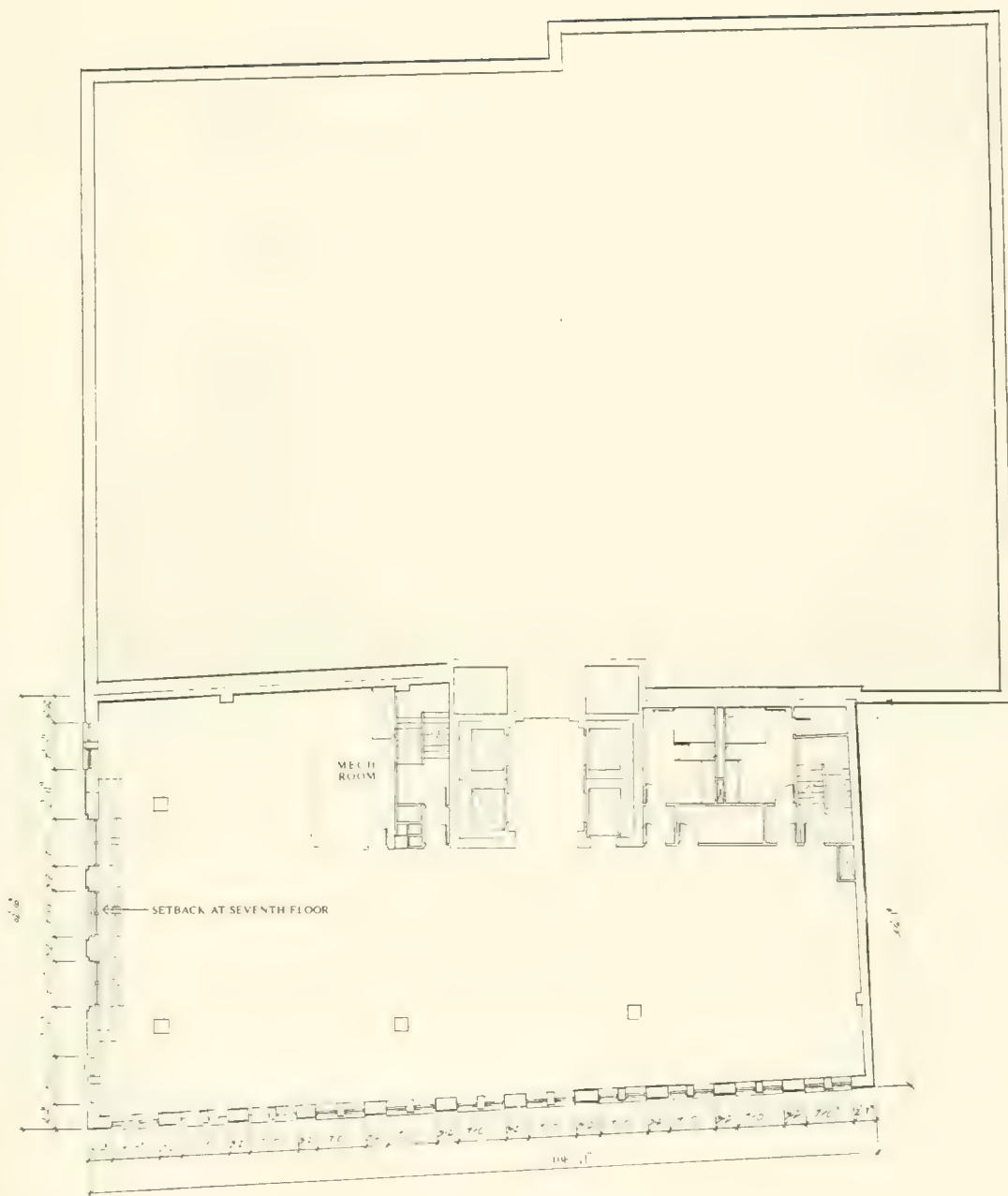
SECOND FLOOR

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

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Figure 9.6-14



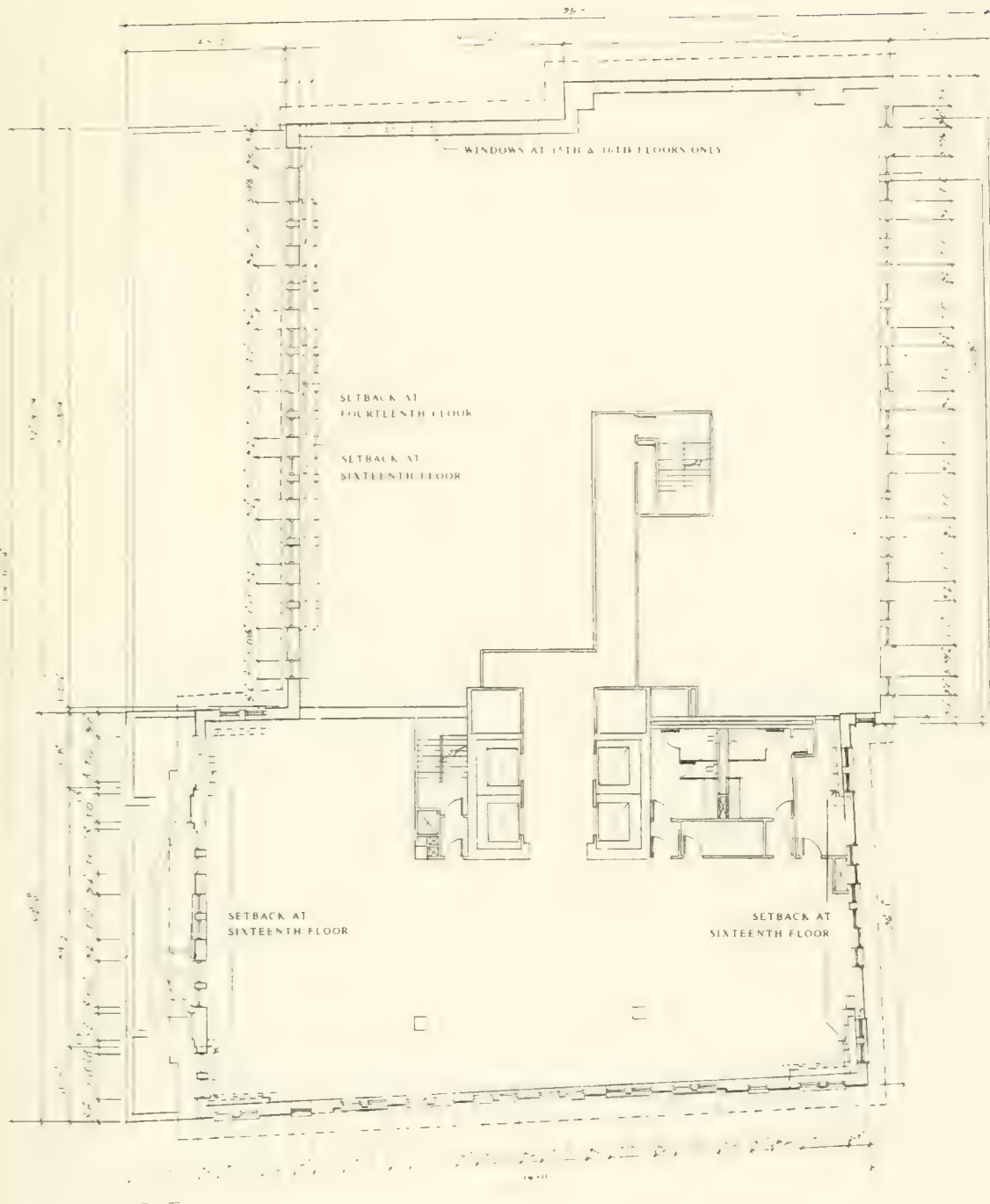
FLOORS 3 - 7

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
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Figure 9.6-15



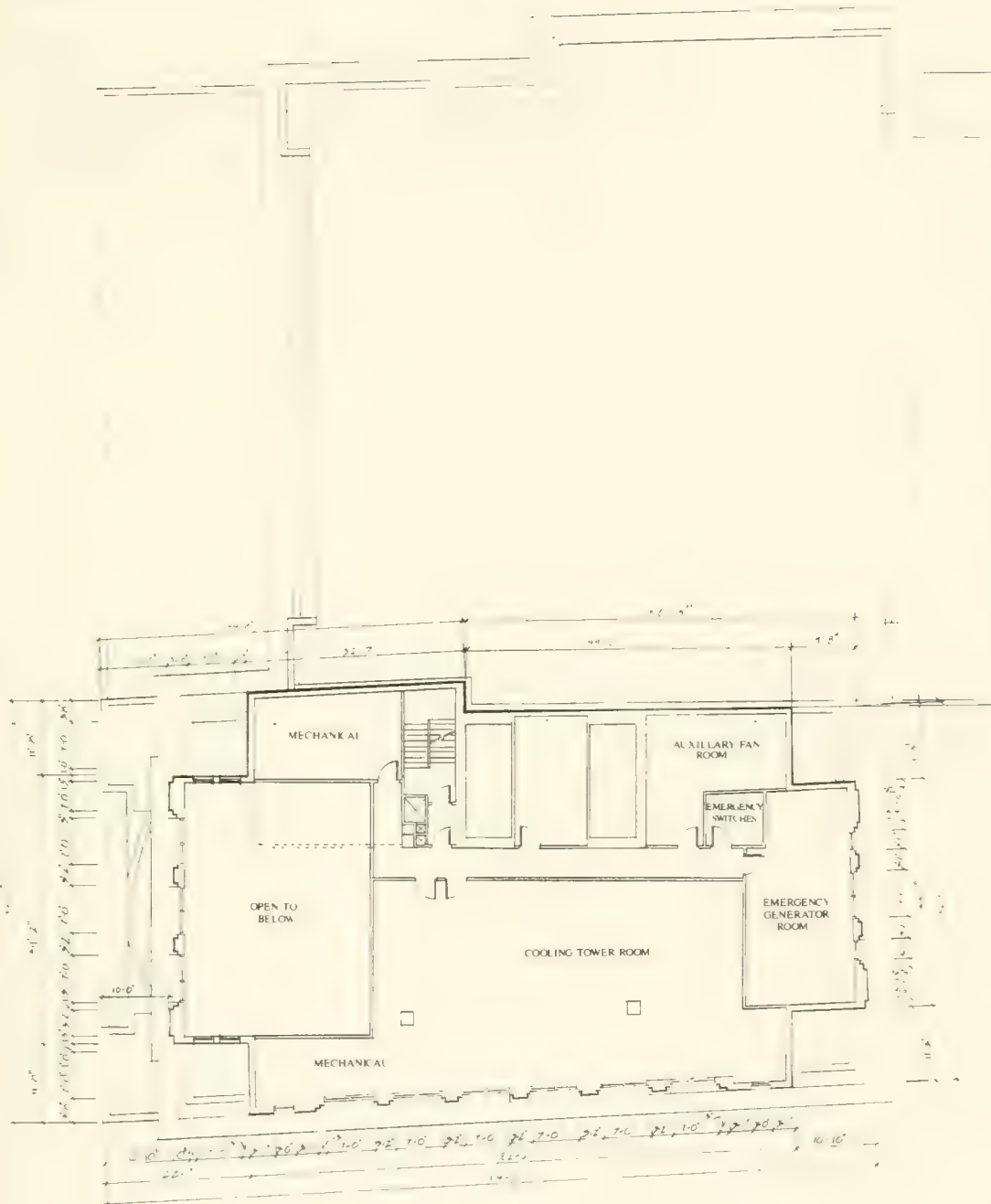
FLOORS 11 - 16

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

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Figure 9.6-17



PENTHOUSE

· NINETY TREMONT STREET · BOSTON, MASSACHUSETTS

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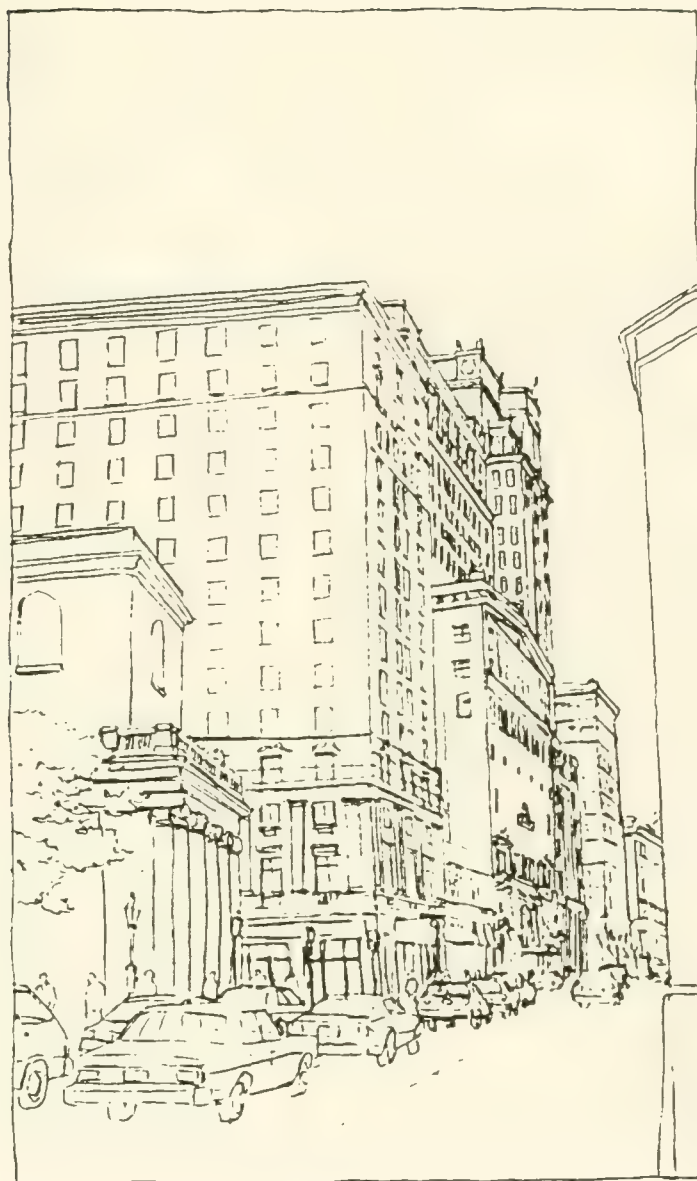
ROBERT A. M. STERN ARCHITECTS
IN ASSOCIATION WITH
JUNG BRANNEN ASSOCIATES, INC.

Figure 9.6-18

9.7 Perspective Views

This section presents the following perspective views:

- Figure 9.7-1 Eye-Level Looking South
- Figure 9.7-2 Eye-Level Looking North
- Figure 9.7-3 View from Paulist Center Roof
- Figure 9.7-4 Aerial Photograph
- Figure 9.7-5 Aerial View



EYE-LEVEL LOOKING SOUTH

PERSPECTIVE

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 3 A 4 DECEMBER 1989

ROBERT A. M. STERN ARCHITECTS
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Figure 9.7-1



EYE-LEVEL LOOKING NORTH

PERSPECTIVE

· NINETY TREMONT STREET ·

BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 3 B 4 DECEMBER 1989

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Figure 9.7-2



VIEW FROM PAULIST CENTER ROOF

· NINETY TREMONT STREET ·
BOSTON, MASSACHUSETTS

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A - 2 4 DECEMBER 1989

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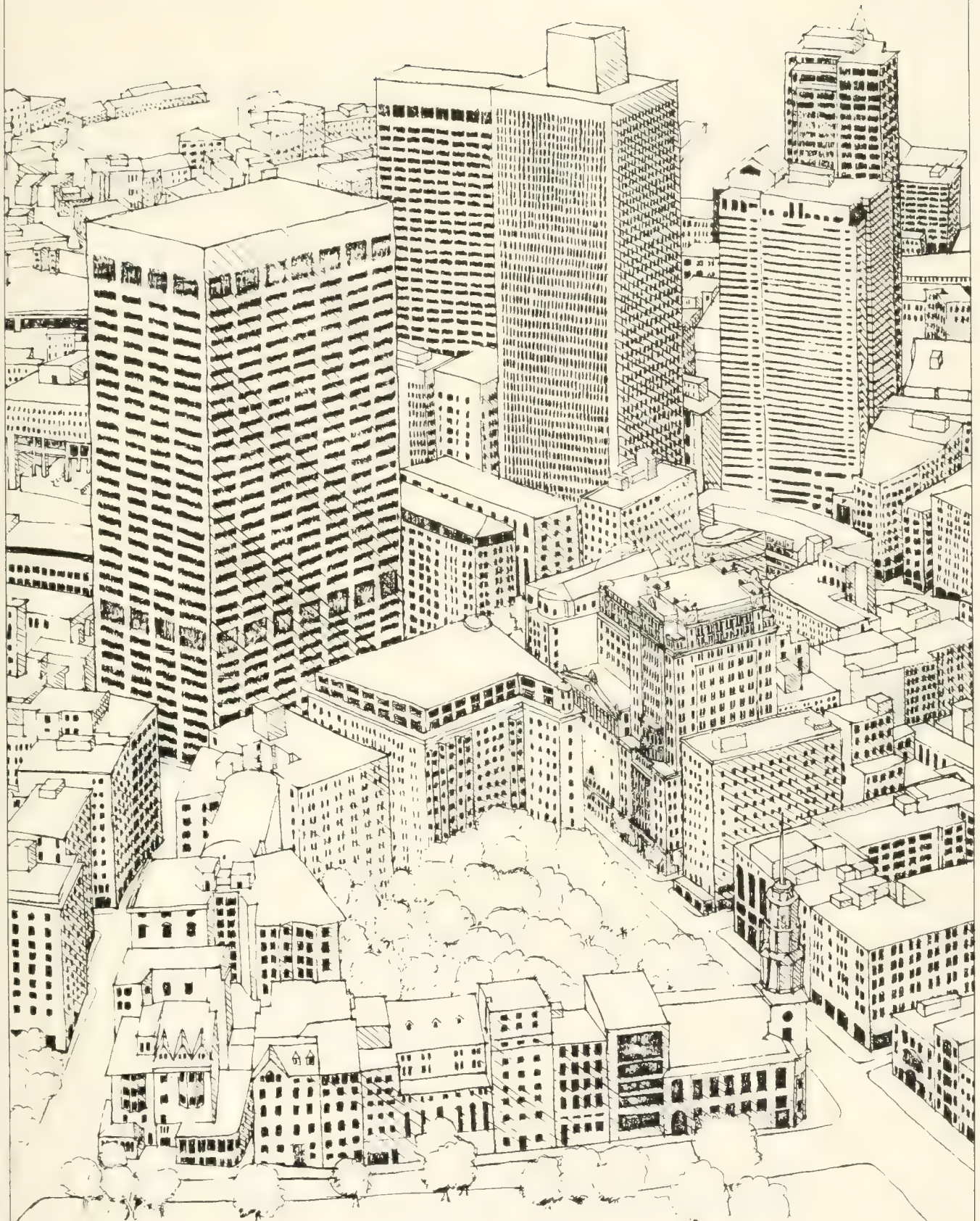
Figure 9.7-3





Figure 9.7-5

AERIAL PHOTOGRAPH



AERIAL PERSPECTIVE

· NINETY TREMONT STREET ·

BOSTON, MASSACHUSETTS

A PROJECT OF ST. JAMES PROPERTIES
A - 1 4 DECEMBER 1989

ROBERT A. M. STERN ARCHITECTS
IN ASSOCIATION WITH
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Figure 9.7-4

9.9 Design Submittal Schedule

The schematic designs for Tremont Temple/90 Tremont Street are being submitted simultaneously with the filing of this Draft Project Impact Report. As indicated in Section 5.2, the Applicant expects to proceed immediately with the Design Development and Construction Drawings phases of the project as soon as Schematic Design approval is obtained. If Schematic Design Approval is received in January, 1990, as assumed, Design Development submittal could occur in March, 1990, with Construction Drawings submitted in May, 1990.

0. HISTORIC RESOURCES

Tremont Temple/90 Tremont Street is located in one of the oldest and best known areas of downtown Boston. Adjacent to the intersection of Tremont and Beacon Streets and within two blocks of Boston Common, the property sits within a historically important commercial, cultural and governmental district. Notable neighbors of the site include colonial churches and burying grounds, Victorian governmental and institutional buildings and early twentieth century commercial structures.

10.1 Historic Districts

Tremont Temple/90 Tremont Street is located one block north of the Ladder Blocks Historic District and the suggested Pre-Fire Mercantile National Register District, and one block east of the Park Street National Register District.

10.1.1 Ladder Blocks Historic District

With the adoption of the Midtown Cultural District Zoning Plan, the Ladder Blocks gained strength and protection as an important historic district in the heart of Boston. Adjacent to the Tremont Street edge of Boston Common and paralleling Washington Street, the Ladder Blocks are comprised of six short blocks running from Bosworth Street on the north to Mason Place at the southern boundary.

A predominance of small Victorian commercial buildings on narrow lots characterizes the District, with the occasional survivor from the Great Fire of 1872. Plans for the Commonwealth Center and Boston Crossing projects call for sensitive juxtaposition of their new structures with those of the District. However, because of the geographical location of Tremont Temple/90 Tremont Street--due north of the Ladder Blocks--the project is expected to generate only minimal environmental impacts on the District.

The Tremont Temple/90 Tremont Street site has historically been characterized as part of the frame to the small scale of the Ladder Blocks and the green space of the Granary Burying Ground/Boston Common corridor. At this end of Tremont Street, buildings increase in size--in lot size, height and bulk--as evidenced by 73 Tremont and the Parker House. The proposed Tremont Temple/90 Tremont Street project will, however, complement both the substantial buildings with which it is associated as well as the finer grain of the Ladder Blocks buildings due to its contextual, highly detailed design.

10.1.2 Pre-Fire Mercantile District

This district has been suggested as a possible National Register District due to the large amount of pre-fire structures remaining. During the Great Fire of 1872, much of

downtown between Washington, Milk, Broad and Summer streets was destroyed. The fire did not reach the Bromfield/Province/Washington streets area in full force, consequently, several pre-fire structures are still standing and in use.

The Tremont Temple/90 Tremont Street site area does not contain any pre-fire structures although several do exist within two blocks of the site. As in the Ladder Blocks situation, Tremont Temple/90 Tremont Street will have only a minimal effect on this District. It will, however, contribute to an increased vitality in the area, hopefully improving the economic values of several currently underutilized and undermaintained pre-fire buildings.

10.1.3 Park Street National Register District

Tremont Temple/90 Tremont Street is adjacent (across Tremont Street) to this historic district which contains the Old Granary Burying Ground, Park Street Church, Chester Harding House and the Boston Athenaeum, all individually listed. The absence of major negative environmental impacts from the proposed project is of primary importance to the District; due to the siting and massing of Tremont Temple/90 Tremont Street, shadow and wind impacts are minimal. The major physical impact, however, is aesthetic; where there now exists a two-story, undermaintained building which detracts from the streetscape, the proposed project will be an attractive, responsible addition to Tremont Street which will offer pedestrians and visitors active ground level uses in keeping with those found in the Park Street National Register District.

10.2 Historic Structures

Several of the more notable structures within the Ladder Blocks, Pre-Fire Mercantile and Park Street Districts are also rated as Category I, II or III by the Boston Landmarks Commission and are discussed below.

10.2.1 New Studio Building

This structure, located at 110 Tremont Street, dates from 1922 and was designed by the team of Blackall, Clapp and Whittemore. The prolific Clarence Blackall was also the architect for Tremont Temple, numerous other theaters and major downtown commercial buildings. The New Studio Building replaced the original Studio Building which housed many of Boston's 19th century artists including Copeland, Griggs, Ordway and Shepleigh. The new building, however, historically housed a typical commercial mix of department and clothing stores, tailors, furriers, beauty shops, jewelers, dentists, lawyers and numerous other services and professional offices.

The New Studio Building is noted as a good example of its early 20th century commercial style, with its granite rusticated



storefront piers, decorative cast iron storefront pilasters and intact lobby details. The proposed Tremont Temple/90 Tremont Street project will have only a minimal effect on the New Studio Building due to its location to the north. Any positive effect which Tremont Temple/90 Tremont Street would generate in terms of increasing the vitality and values as well as the pedestrian experience in the area would accrue to the existing building at 110 Tremont Street or to any new structure on that site.

10.2.2 Phillips Building

This classical building, located at 120 Tremont Street, was designed by one of Boston's most respected architects, Nathaniel J. Bradlee together with Walter Winslow and George Wetherell. It was constructed in three stages from 1883 to 1892 in the Second Renaissance Revival Commercial Style, and is a good example of a well-detailed building of the classical revival style. The Phillips Building's original storefronts have been removed and modernized, however, classical details and fenestration on the upper floors are still intact. Typical tenants included service retail and professional offices. Tremont Temple/90 Tremont Street would have a positive effect on the Phillips Building or on any new structure which may be built on the site, similar to its effect on the New Studio Building.

10.2.3 Parker House Hotel

The Omni Parker House, at the corner of School and Tremont streets actually wraps behind Tremont Temple along Chapman Place and terminates at the Bosworth Building (Parker House Annex) at the corner of Chapman Place and Bosworth Street. This former grand dame of Boston hotels still boasts ornate American oak and walnut panelling, limestone flooring, barrel vaulted and molded plaster ceilings, bronze chandeliers, stained glass windows and richly designed elevator doors in its public spaces--the ground floor lobby, mezzanine level and dining room.

The original 1856 Parker House and its later additions resembled a French chateau with a brilliant white facade, architectural ornamentation, bay windows and much detail. The existing hotel structure was constructed in 1927 with references to the earlier, ornate hotel, however, today it displays a much more subdued sense of style. Much of the reason for this was that in 1947, several of the building's decorative elements were removed including a bay window at the School/Tremont Streets corner which extended from the fourth through the eleventh floors, and decorative terra cotta detailing on the facade and cornice.

The current owners of the Parker House have discussed the possibility of restoring the exterior and replacing the out of

scale, two-story Cafe Tremont, which sits on Tremont Street between the main Parker House structure and Tremont Temple, with an addition which is in keeping with the scale and level of detail of the area.

Throughout the planning and design of Tremont Temple/90 Tremont Street, the Applicant has kept the Parker House owners informed of construction and schedule details and expects to have a memorandum of understanding executed shortly regarding mutual easements, cooperation during construction and related legalities. As the new construction of Ninety Tremont Street will not physically intrude on the Parker House property, there will be only indirect construction impacts on the hotel. After construction, only negligible environmental impacts will exist such as minimal net new shadows on the Parker House roof. The Applicant will also continue to work with the Parker House to minimize impacts related to all of the proposed construction work in the area.

The Tremont Temple/90 Tremont Street project will, however, complement and increase the value of the Parker House by improving the two properties which share the block on which it is located. The Partnership will also plan the improvements for Bosworth Street in cooperation with the owners of the Parker House and the proposed Province House Park adjacent to the 45 Province Street project and the Marliave Restaurant. The increase in both daytime and evening activity which is expected initially from Tremont Temple/90 Tremont Street and the Bosworth Street pedestrian way, and later from the renewed Parker House, will create a synergy of increased vitality for all of the properties in the area.

10.2.4 20-30 Bromfield Street

This pre-fire mercantile block was constructed in 1848 and is a fine example of the austere granite Greek Revival/Egyptoid commercial row of 19th century Boston. Originally comprised of five buildings, only three remain today. Although their storefronts have been altered, the restrained upper level fenestration and detailing are still evident. The atypical introduction of egyptoid capitals to the simple Greek Revival style is considered to be influenced by the Granary Burying Ground's granite gate which is directly visible at the terminus of Bromfield Street. The Tremont Temple/90 Tremont Street site, however, is not close enough to 20-30 Bromfield Street to generate major or direct environmental impacts on the block in any way other than by exerting a positive influence on the area in general.

10.2.5 Wesleyan Building

Another pre-fire granite structure, the Wesleyan Building, at 32-38 Bromfield Street, was constructed in 1870 in the French Second Empire/Neo Grec style. This granite building with a

steep slate mansard roof, was once headquarters for the Methodist Church in Boston and housed related religious establishments and enterprises including the 300 - 400 seat Wesleyan Hall on the second floor.

Today, the Wesleyan Building is like several of its neighbors on Bromfield Street, underutilized and negatively affected by the area's somewhat depressed property values. Although not close enough to Tremont Temple/90 Tremont Street to be negatively or directly affected by it, the Wesleyan Building will be indirectly positively affected from all of the proposed development in the area, including 45 Province Street which will be in view from the Wesleyan Building as well as the improved pedestrian way along Bosworth Street.

10.3 Historic Open Spaces

Several of the open spaces in the area will receive direct investment from the Tremont Temple/90 Tremont Street project such as the Granary Burying Ground, Bosworth Street and the Tremont streetscape. Other open spaces such as the Province House Steps, King's Chapel Burying Ground and Old City Hall Park will be indirectly affected in a positive manner from the anticipated increased pedestrian activity and improved perception of the area in general.

10.3.1 Granary Burying Ground

The Granary is a major attraction along Boston's Freedom Trail because of the large number of important Colonial and Federal Bostonians buried there. The lore on the Old Granary Burying Ground includes stories of ladies and gentlemen picnicking within its grand granite Egypto-Victorian gates, among elm trees and elegantly carved and detailed monuments and slate headstones. Although the Granary is not used for such activities any longer, visitors do spend time reading the thoughtful printing and studying the excellent examples of folk art on over 2,000 grave markers.

Tremont Temple/90 Tremont Street will be readily visible from within the Granary yet will cause only minimal environmental impacts. Wind studies indicate minor effects and shadow studies, as illustrated in Section 7.2, again indicate only minor effects. Historically, the Granary Burying Ground has been encircled on three sides by buildings while facing a solid streetwall of substantial buildings across Tremont Street. Because of the aberration of the two-story Dini's Restaurant building at 90 Tremont Street, the sense of a continuous street edge across from the Granary has been absent. The replacement of the truncated structure at 90 Tremont Street by the Tremont Temple/90 Tremont Street project will recreate the historic streetwall condition which will be perceived by visitors in the Granary.

The direct capital investment in the Old Granary Burying Ground from the Tremont Temple/90 Tremont Street project is described in Section 4.7.1 and includes participation by the Applicant in the activities of the Friends of the Granary Burying Ground as well as specific in-kind contributions to potentially include lawn, security and lighting improvements and implementation of a tree program. It is also in the Applicant's best interest to contribute to and ensure proper maintenance of and enforcement in the Granary due to its proximity to the entrances of Tremont Temple/90 Tremont Street. The Applicant is willing to assist with planning for future Burying Ground management programs.

10.3.2 Bosworth Street

Bosworth Street is currently an undermaintained service/back-alley type street for several restaurants and commercial establishments and consequently, not a widely used pedestrian way. The street is technically a public way through-street to School Street via Chapman Place for fire access and loading and deliveries, but because it is narrow and difficult to negotiate, does not encourage regular auto through traffic. In addition, due to the change of grade at the Province House Steps, vehicular access directly to Province Street is not possible. The proposed parking in the basement levels of Tremont Temple/90 Tremont Street for 80 cars will also generate only a minimal amount of two-way vehicular activity on Bosworth Street.

These light-traffic conditions afford the opportunity to create a positive pedestrian environment on Bosworth Street, thus encouraging increased active and passive public usage. Plans from the inception of the Tremont Temple/90 Tremont Street project have included the upgrade of Bosworth Street into a pedestrian way surrounded by contextual Boston buildings and enlivened by public amenities of the several new development projects proposed for the area.

The Applicant will work together with the owners of the Parker House and 45 Province Street to implement a street and sidewalk improvement plan which will complement the proposed Province House Park. Preliminary plans call for the exposure of cobblestone and granite paving where it exists, new pavers where required, street and building lamps, plantings, and both permanent and movable seating. If possible, the sidewalk area adjacent to the Ninety Tremont Street restaurant will be enlarged to allow for seasonal outdoor dining through four sets of french doors, as well as to discourage through traffic other than service, emergency and parkers.

A possible image for the landscape treatment of Bosworth Street, or at least an opportunity for an interpretive exhibit, would be to continue the Province House theme. Historically, the grand Colonial Governors' house fronted on Washington Street and accessed its upper level garden and stables (the

Bosworth Street area) via the Province House Steps. The Colonial garden and stable representation would not be literal, however, could prove to be an interesting and educational theme.

The Applicant will also approach the owners of the buildings on the south side of Bosworth Street to involve them in the street and sidewalk improvement plan as well as to encourage the upgrade of their Bosworth Street facades. Design assistance may in fact be coordinated by the Applicant in conjunction with City agencies and private groups such as Downtown Crossing Association.

10.3.3 Tremont Streetscape

Tremont Temple/90 Tremont Street will fill in a long existing gap in the Tremont streetwall which has detracted from the streetscape for over thirty years. The renovation of the Tremont Temple facade will restore its former prominence and brilliance in the block. Further, the new construction of Ninety Tremont Street will complement and highlight the late Victorian streetscape through its ornate details and textures, rusticated stonework and rich cornices.

Through the strategic use of graduated setbacks, Tremont Temple/90 Tremont Street will have a fine-grained human scale quality when perceived from the street, and an elegant, Classical presence when viewed in the skyline. These setbacks, along with the narrowness and grade changes of Tremont Street, allow for minimal visual intrusion of the air rights extension over the Temple and are also partially responsible for the limited environmental effects discussed in Sections 7.1, 7.2 and 7.3 of the Environmental Protection Component of this report.

Tremont Temple/90 Tremont Street will be a welcome addition to the streetscape; it will complement the aesthetic quality of the area and increase its level of vitality while simultaneously having a civilizing effect on this still-improving section of the City.

10.3.4 Other Open Spaces

Indirect positive effects from Tremont Temple/90 Tremont Street will be felt by visitors to the Province House Steps, King's Chapel Burying Ground and Old City Hall Park. Daytime and evening activity will increase, thus encouraging increased active and passive public usage of the area's parks, open spaces and pedestrian ways. No negative impacts including net new shadows will be cast on the Province House Steps, King's Chapel Burying Ground or Old City Hall Park.

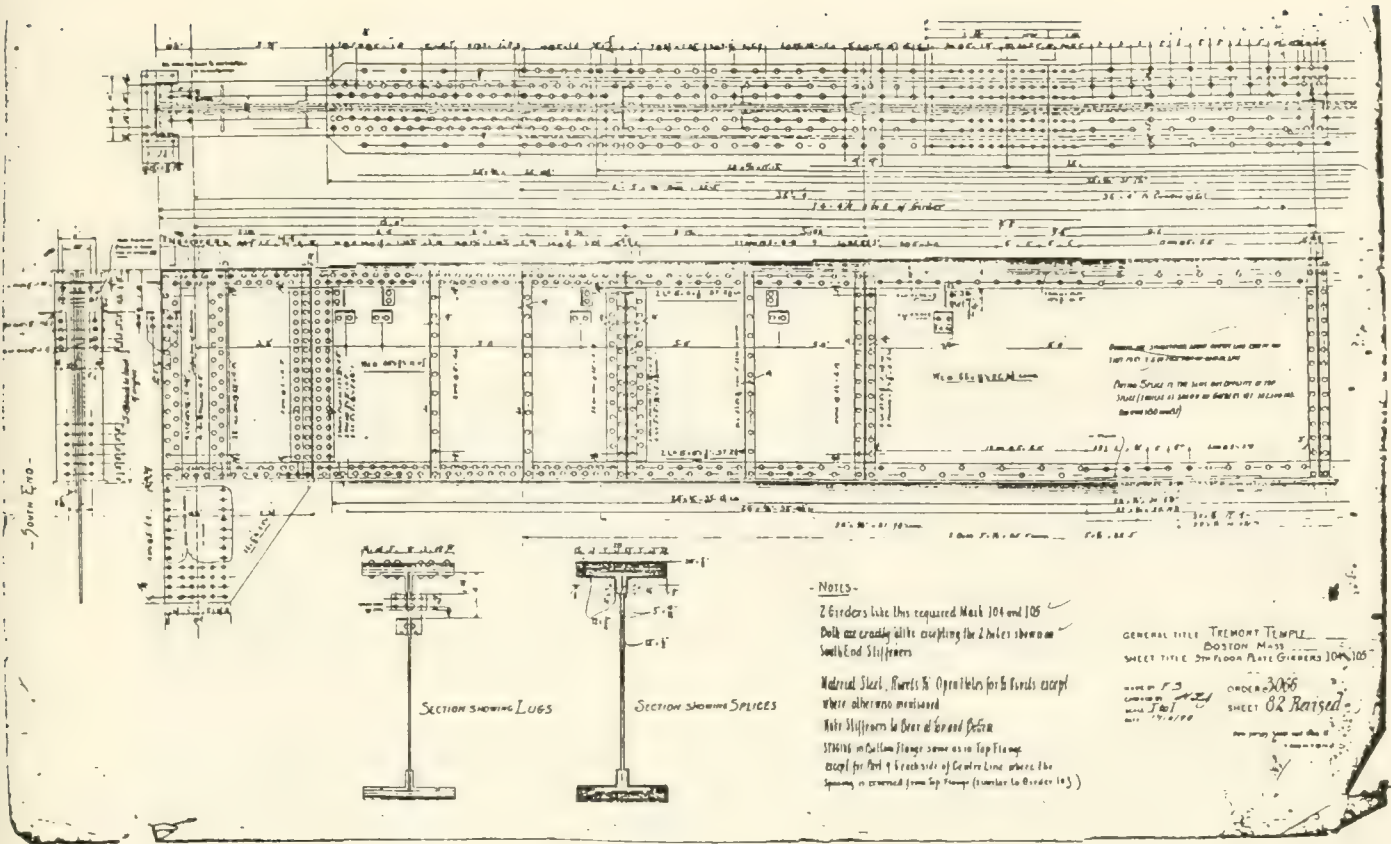
10.4 Tremont Temple

One of the more interesting aspects of the history of Tremont Temple is the architect who designed the existing Temple building. Clarence H. Blackall, founder and first president of the Boston Architectural Center, designed, in partnership with George F. Newton, this eclectic Beaux Arts structure combining the images of Greek temple, Pompeiian villa, Roman triumphal arch, Venetian palazzo and Turkish mosque to house the Church, retail and offices within.

Clarence Blackall was the first recipient of the Rotch travelling scholarship which allowed him to travel extensively in Europe. Not surprisingly, the classical architectural styles he studied were manifested in his designs for Tremont Temple as well as numerous other Boston buildings including: mixed- and single-use theaters such as the Colonial Building/Colonial Theater, the Wang Center, the Wilbur, Modern, Unique, Scollay Square Olympia and Pilgrim Theaters; office buildings such as the Little, New Studio, Winthrop, Marshall, Royal Arcanum, 581 Boylston Street and 19 School Street; and grand hotels including the Copley Plaza, Braymore, Kenmore and Avery. Blackall's description of the design, construction, details and symbolism of Tremont Temple is included in Appendix D, Tremont Temple Baptist Church, A Light in the City for 150 Years.

Tremont Temple was not only an exercise in stylistic composition for C.H. Blackall, it was also quite technologically advanced for its time in terms of its structural design as well as the building materials used within, and to face the building. Tremont Temple was one of the first steel framed buildings in Boston. Blackall was also the designer of the first--the circa 1893 Winthrop Building on Water Street--so was well equipped to take on the challenge of designing the Temple's 70 foot wide, 60 foot high main auditorium without the use of interior supports. The enormous plate girders, the largest ever manufactured in this country, were also virtually fireproof being first encased in porous terra cotta, then set in Portland cement.

For the facade of the Temple, Blackall combined limestone on the first and second floors with architectural terra cotta above--a popular material for Beaux Arts buildings around the turn of the century due to the versatility in form and color which it afforded. Over 10,000 glazed bricks of fifteen different colors were laid in a diamond pattern with the intent of projecting an image of a watercolor, as Blackall describes in his account of the building, included in Appendix D. This patterned area is surrounded by limestone trim and detailing including wreathed oculus windows, dolphins, open Bibles, swords, palm fronds, crosses and nails, grape vines, cherubs, shields, pomegranates, roses, apples, ears of corn, lilies, olive branches, stars, acroteria, laurel wreathes, lions heads,



Numerous original drawings exist of Tremont Temple which will aid in the planning and design of the restoration.

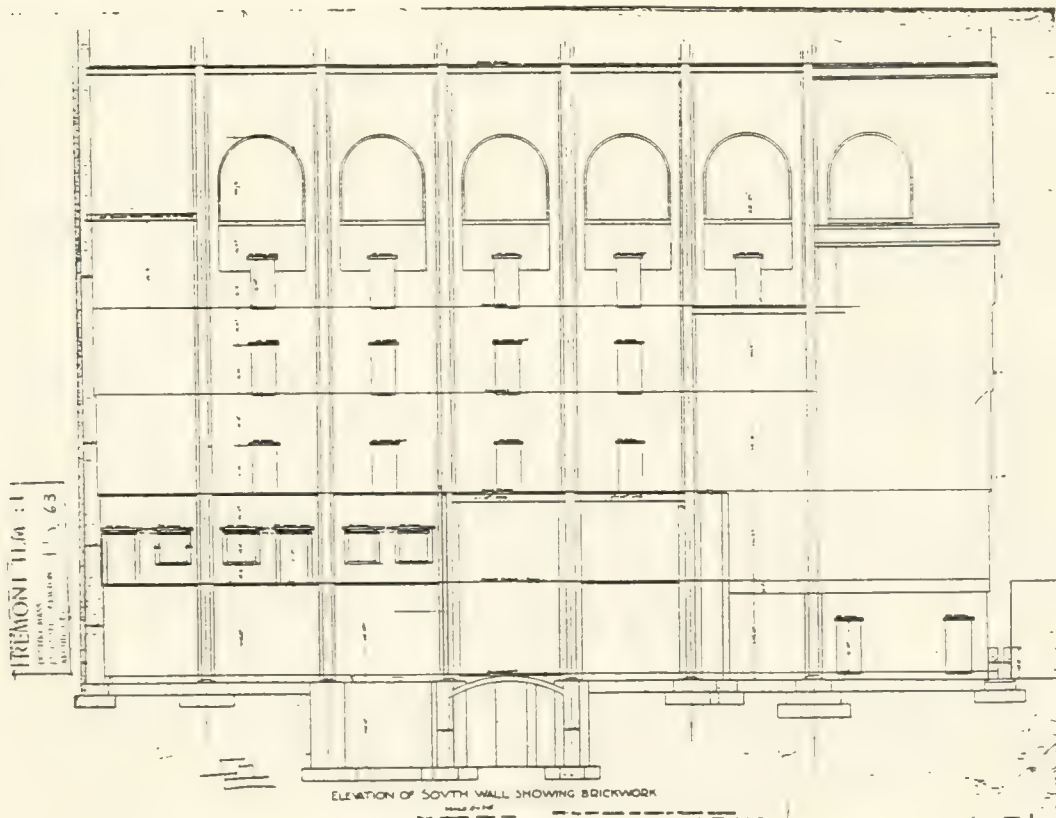


Figure 10-1

engaged Ionic half columns and classic cornice moldings.

The interior of Blackall's Tremont Temple, specifically Converse Hall, is equally if not more ornate than its facade. The 40 foot coffered arch and grand mural inset on the east wall of the auditorium forms the back of the speaker's platform and the frame for the 6,000 pipe Casavant organ. This grand organ was built in 1923 by Jesse Woodbury and Company of Boston and contains works made entirely of wood. In keeping with the architect's mandate to fireproof Tremont Temple as much as possible, the organ's case is virtually fireproof and all of its woodwork is painted with fireproof paint.

Other features of Converse Hall include: twelve large arched stained glass windows, the deeply coffered and molded plaster ceiling, a choir gallery for 75 with a richly carved oak front and marble walls, multi-light dropped pendant papier mache chandeliers, and an eight foot square baptismal tank lined with enameled terra cotta which is still in use today.

Yet another interesting--and ironic--aspect of the Temple's architect relates to his urban design/social responsibility philosophy. Because of his design and engineering skills, Blackall was a vocal proponent for the new, slender, steel framed skyscraper as a symbol of American business progress and prosperity. He was also an ardent advocate of utilizing profits from such business endeavors for the public benefit through innovative financing structures.

Blackall worked for many years on, and formally proposed (unfortunately six months before the crash of 1929) a unique 25-story mixed-use Art Deco tower downtown to be the Architects and Builders Headquarters for the benefit of Bostonians in those trades, as well as the public at large. Architects' and builders' services, support facilities, offices and related uses were to be housed in the building with a portion of the rental income being contributed to the pension funds and retirement care costs of Boston architects and builders.

The advanced steel design technology of the time was also viewed by Blackall as a means to not only create striking urban environments with skylines of slender, elegant towers, but also to inspire architects to act in a fiduciary way when designing such towers for the public benefit. Blackall, in fact, served on commissions in both Boston and New York which explored zoning and height regulations. Not surprisingly, Blackall was an advocate for the abolishment of all height restrictions citing the strength, safety, public benefit and aesthetic arguments related to steel frame construction.

Clarence H. Blackall was truly a unique architect for his time, involved in politics and the development economics of urban design. He attributed the resistance of local decision makers to entertain his innovative proposals to Boston's

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Clarence H. Blackall was truly a unique architect for his time, involved in politics and the development economics of urban design. He attributed the resistance of local decision makers to entertain his innovative proposals to Boston's

characteristically conservative traditions. A 1,500 foot high tower which Blackall once proposed, however, would probably never have been constructed, even in a non-height restricted environment.

Since the erection of Tremont Temple in 1894, its physical and design aspects have not only been interesting, they have been integral to the history of Tremont Temple Baptist Church. Powerful and well-attended services, speeches and performances took place in the grand auditorium, the capital to fund the Church's operations was provided by the retail and office space designed into the building, and the general confidence in the structural and fire-proof qualities of the Temple allowed the Church to focus primarily on their religious programs rather than on asset management. Years of limited resources, however, have taken their toll on the Temple.

To enable Tremont Temple Baptist Church to continue its mandate of open, desegregated worship and community service, it must remain in its downtown location; being close to its parishioners and providing continuity and a safe haven are primary considerations for the Church. Undertaking a renovation program immediately, rather than commencing the typically lengthy foundation grant request process is also necessary to save the structure from potentially permanent damage.

With the approval of the innovative Tremont Temple/90 Tremont Street joint development project proposed herein, all interested parties will contribute to the preservation of the significant Temple structure as well as the Tremont Temple Baptist Church itself. As Clarence H. Blackall wrote in Tremont Temple Sketch Book: A Description of the Edifice in 1896:

"It has been calculated that if it were possible for one man to do all the work incidental to the erection of this structure, assuming that the materials themselves were ready to his hand, he would be occupied for something over 350 years at his task; whereas, if he were obliged to go back to first principles, obtain all his materials from nature, fashion everything himself, more than three thousand years would elapse before he could complete his labors. These figures simply mean that in order to produce a modern structure of this nature a system of co-operation is to be put in motion which is almost as far-reaching as the ends of the world and which call into active play the agencies of thousands of men all over the country, and the enormous power of countless machines and factories."

This spirit of collaboration and cooperation produced Tremont Temple in 1894 and continues today in the Partnership's and the Society's joint proposal for Tremont Temple/90 Tremont Street.



TREMONT TEMPLE / 90 TREMONT STREET

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